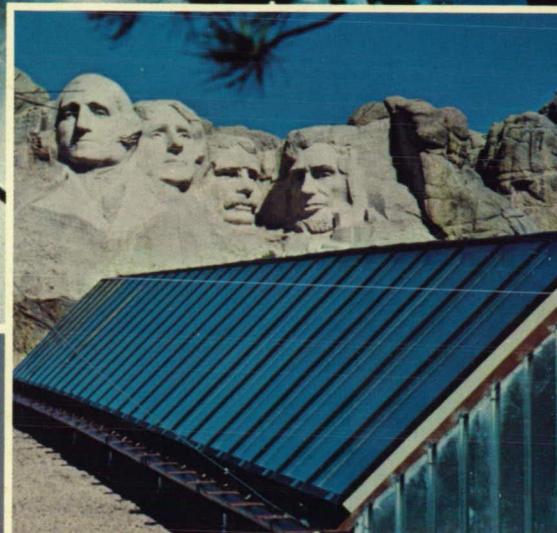


NASA Tech Briefs

Index 1978

National
Aeronautics and
Space
Administration



INTRODUCTION

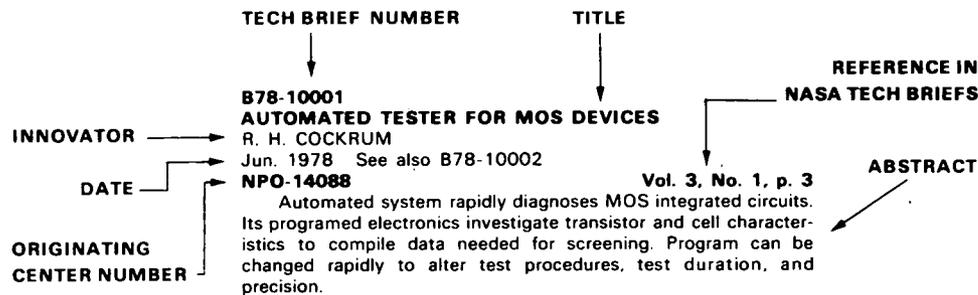
Tech Briefs are short announcements of new technology derived from the research and development activities of the National Aeronautics and Space Administration. These briefs emphasize information considered likely to be transferrable across industrial, regional, or disciplinary lines and are issued to encourage commercial application.

This *Index to NASA Tech Briefs* contains abstracts and four indexes -- subject, personal author, originating Center, and Tech Brief number -- for 1978 Tech Briefs.

Abstract Section

The abstract section is divided into nine categories: Electronic Components and Circuits; Electronic Systems; Physical Sciences; Materials; Life Sciences; Mechanics; Machinery; Fabrication Technology; and Mathematics and Information Sciences. Within each category, abstracts are arranged sequentially by Tech Brief number.

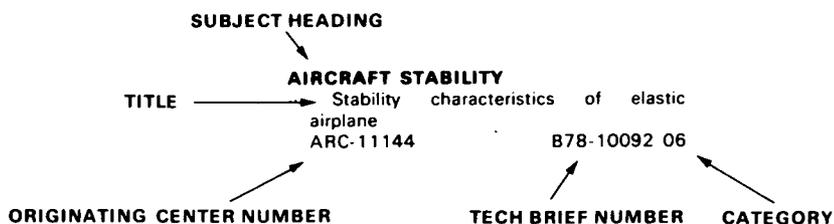
A typical abstract entry has these elements:



The originating Center number in each entry includes an alphabetical prefix that identifies the NASA Center where the Tech Brief originated. A list of prefixes and the corresponding Center names are given on page iii.

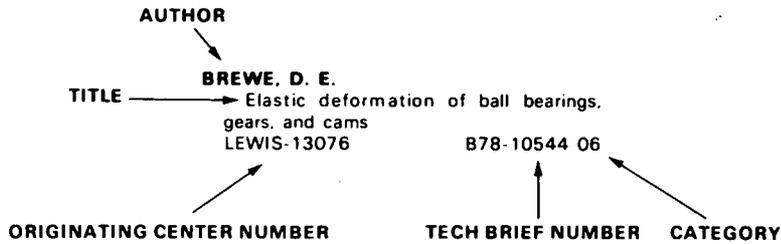
Indexes

Four indexes are provided. The first is a subject index, arranged alphabetically by subject heading. Each entry in the subject index includes a Tech Brief number and a category number to aid the user in locating pertinent entries in the abstract section.

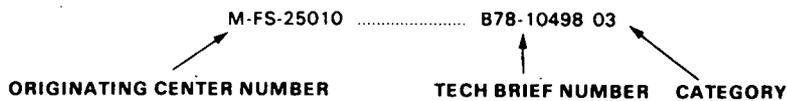


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The second index is a personal author index. Entries in this index are arranged alphabetically by author's name. Tech Brief and category numbers are supplied to help the user find the appropriate entries in the abstract section.



The third index relates each originating Center number to the corresponding Tech Brief number and category. Entries in this index are arranged in alphanumeric order by Center number.



The fourth index relates each Tech Brief number to its originating Center number. Entries are arranged in ascending Tech Brief number order.



Originating Center Prefixes

ARC	Ames Research Center
GSFC	Goddard Space Flight Center
HQ	NASA Headquarters
KSC	Kennedy Space Center
LANGLEY	Langley Research Center
LEWIS	Lewis Research Center
M-FS	Marshall Space Flight Center
MSC	Johnson Space Center (formerly Manned Spacecraft Center)
NPO	Jet Propulsion Laboratory/NASA Pasadena Office

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Index to NASA Tech Briefs

February 1979

Abstract Section

01 ELECTRONIC COMPONENTS AND CIRCUITS

B78-10001

AUTOMATED TESTER FOR MOS DEVICES

R. H. COCKRUM

Jun. 1978 See also B78-10002

NPO-14088

Vol. 3, No. 1, p. 3

Automated system rapidly diagnoses MOS integrated circuits. Its programed electronics investigate transistor and cell characteristics to compile data needed for screening. Program can be changed rapidly to alter test procedures, test duration, and precision.

B78-10002

MEASURING OXIDE TRAPPING PARAMETERS IN MOS STRUCTURE

J. MASERJIAN

Jun. 1978 See also B78-10001

NPO-14120

Vol. 3, No. 1, p. 4

System for controlled injection of electrons or holes into oxide layer of MOS capacitor can be used to measure oxide trapping parameters. Since trapping mechanisms can cause degradation and ultimate failure of MOS elements exposed to ionizing radiation, system can be helpful in predicting device tolerance.

B78-10003

NYLON SCREWS MAKE INEXPENSIVE COIL FORMS

G. AUCCOIN (TRW, Inc.) and C. ROSENTHAL (TRW, Inc.)

Jun. 1978

MSC-16912

Vol. 3, No. 1, p. 5

Standard nylon screws act as coil form copper wire laid down in spiral thread. Completed coil may be bonded to printed-circuit board. However, it is impossible to tune coil by adjusting spacing between windings, technique sometimes used with air-core coils.

B78-10004

GATE-ASSISTED TURN-OFF THYRISTOR

L. R. LOWRY (Westinghouse Electric Corp.), D. J. PAGE (Westinghouse Electric Corp.), and E. S. SCHLEGEL (Westinghouse Electric Corp.)

Jun. 1978 See also NASA CR-134951 (N77-31405)

LEWIS-12535

Vol. 3, No. 1, p. 6

1,000-volt, 200-ampere gate-assisted turn-off thyristor has been developed for power circuits requiring high efficiency, small size, and low weight. Design features include shunted cathode for high dV/dt capability. Cathode is interdigitated with dynamic gate for fast, low-loss switching. Operating frequency exceeds 20 kHz with overall energy dissipation of less than 12 mJ per pulse for

typical 20-microsecond half-sine waveform. Device has turn-on time of 2 microseconds and turn-off time as short as 3 microseconds with only 2 amperes of gate drive.

B78-10005

S-BAND COMPLEX-WEIGHT MODULE FOR ADAPTIVE PROCESSING

A. J. GIANATASIO (Harris Corp.), J. B. SCHAPPACHER (Harris Corp.), D. G. SCOTT (Harris Corp.), and M. R. WILLIAMS (Harris Corp.)

Jun. 1978

LANGLEY-12197

Vol. 3, No. 1, p. 7

S-band complex weight for adaptive processing is fabricated as microwave integrated circuit. When interfaced with suitable control component, it is potentially capable of producing 25 dB rejection of interface with bandwidth of 500 MHz. Performance improves with decreased bandwidth. Versatility stems from numerous control methods available in broadening field of adaptive processing.

B78-10006

ADAPTIVE POLARIZATION SEPARATION EXPERIMENTS

C. A. BAIRD (Harris Corp.), A. J. GIANATASIO (Harris Corp.), G. M. PELCHAT (Harris, Corp.), G. G. RASSWEILER (Harris Corp.), D. G. SCOTT (Harris Corp.), R. F. VARLEY (Harris Corp.), and L. R. YOUNG (Harris Corp.)

Jun. 1978

LANGLEY-12196

Vol. 3, No. 1, p. 8

Network approach lends itself to simple, direct, analog adaptive control. System constructed and tested successfully with adaptive control yielding residual cross polarization below main channel level for input cross polarization. Canellation network significantly cancels polarization over very wide bandwidths and is adaptively controlled.

B78-10007

CURVE TRACER CHECKS CMOS IC'S

F. KIZER

Jun. 1978

GSFC-12209

Vol. 3, No. 1, p. 9

Conventional transistor curve tracer can speed up failure analysis of CMOS integrated circuits by displaying transfer characteristics while device is subjected to vibration or environmental testing. Failures that show up as change in threshold voltage or transfer characteristics are quickly detected.

B78-10008

PORTABLE SPARK-GAP ARC GENERATOR

L. R. IGNACZAK

Jun. 1978

LEWIS-12886

Vol. 3, No. 1, p. 10

Self-contained spark generator that simulates electrical noise caused by discharge of static charge is useful tool when checking sensitive component and equipment. In test set-up, device introduces repeatable noise pulses as behavior of components is monitored. Generator uses only standard commercial parts

01 ELECTRONIC COMPONENTS AND CIRCUITS

and weighs only 4 pounds; portable dc power supply is used. Two configurations of generator have been developed: one is free-running arc source, and one delivers spark in response to triggering pulse.

B78-10009

COAXIAL ISOLATOR HAS VERSATILE INTERFACE

D. L. OLSSON (TRW, Inc.)

Jun. 1978

MSC-16908

Vol. 3, No. 1, p. 11

Approach increases system-packaging flexibility. Isolators are constructed with removable connectors that can be changed to meet user's requirements. Technique reduces development scheduling problems. Isolators can be procured before package design is firm and then readily reconfigured to meet final design requirements. Changes to existing designs to incorporate removable connectors are minimal. Small adapter plates increase size modestly; weight increase is negligible.

B78-10010

SIMPLE TOOL REMOVES IC FLAT PACKS

J. EGGBEEN (Sperry Rand Corp.)

Jun. 1978

MSC-16058

Vol. 3, No. 1, p. 12

Handtool has bifurcated handle that can be tightened so that clamping head grips pack securely. Tool easily removes hybrid integrated-circuit flat packs from printed-wiring boards. It does not damage circuit or board; thus, board can be reused with replacement circuit, and old circuit can be analyzed for faults and, if possible, repaired.

B78-10011

DIGITAL PHASE SHIFTER SYNCHRONIZES LOCAL OSCILLATORS

S. M. ALI (Rockwell International Corp.)

Jun. 1978

MSC-16695

Vol. 3, No. 1, p. 12

Digital phase-shifting network is used as synchronous frequency multiplier for applications such as phase-locking two signals that may differ in frequency. Circuit has various phase-shift capability. Possible applications include data-communication systems and hybrid digital/analog phase-locked loops.

B78-10012

EFFICIENT DC-TO-DC CONVERTER

J. M. BLACK

Jun. 1978

FRC-11014

Vol. 3, No. 1, p. 14

Circuit consists of chopper section which converts input dc to square wave, followed by bridge-rectifier stage. Chopper gives nearly-ideal switching characteristics, and bridge uses series of full-wave stages rather than less-efficient half-wave rectifiers found in previous circuits. Special features of full-wave circuit allow redundant components to be eliminated, lowering parts count. Circuit can also be adapted for use as dc-to-dc converter or as combination dc-and-ac source.

B78-10148

SYMMETRIC VOLTAGE-CONTROLLED VARIABLE RESISTANCE

J. C. VANELLI (Lockheed Elec. Co., Inc.)

Oct. 1978

MSC-16685

Vol. 3, No. 2, p. 165

Feedback network makes resistance of field-effect transistor (FET) same for current flowing in either direction. It combines control voltage with source and load voltages to give symmetric current/voltage characteristics. Since circuit produces same magnitude output voltage for current flowing in either direction, it introduces no offset in presence of altering polarity signals. It is therefore ideal for sensor and effector circuits in servocontrol systems.

B78-10149

FAST DIFFERENTIAL ANALOG-TO-DIGITAL CONVERSION

A. G. BIRCHENOUGH and W. J. RICE

Oct. 1978

LEWIS-12909

Vol. 3, No. 2, p. 166

Technique first digitizes difference between input and previous conversion. Digitized difference is added to previous digitized value to yield new digital representation of analog input. Output of analog-to-digital converter is useful as digital derivative of input signal.

B78-10150

IMPROVED SERVOCONTROL SYSTEM

E. C. BUCHANAN

Oct. 1978

M-FS-19358

Vol. 3, No. 2, p. 167

System combines error signal with output of deadband circuit, which offsets any decrease in gain of error circuit for rapid changes in input signal.

B78-10151

HIGH-POWER RF SWITCH

E. R. CARO

Oct. 1978

NPO-14229

Vol. 3, No. 2, p. 168

Switch designed for vacuum environments can handle 5 kilowatts of microwave power. Arcing between conductors is prevented by filling gaps with Teflon rather than with inert gas as in conventional switches. Thus, switch is not susceptible to gas leakage, problem faced by conventional switches in high-vacuum applications. Compact three-port switch, developed for microwave radar transmitters aboard spacecraft, is operated by depressing spring-mounted insulating pins that can be remotely actuated by relay. When pin is depressed, it routes microwave signals to selected output port.

B78-10152

TEMPERATURE STABILIZATION OF MICROWAVE FERRITE DEVICES

R. KAMINSKY (Cutler Hammer, Inc.) and E. J. WENDT (Cutler Hammer, Inc.)

Oct. 1978

MSC-16833

Vol. 3, No. 2, p. 169

Thin-film heating element for strip-line circulator is sandwiched between insulation and copper laminations. Disks conform to shape of circulator ferrite disks and are installed between copper-clad epoxy ground planes. Heater design eliminates external cartridges and reduces weight by approximately one-third.

B78-10153

IC IMPLEMENTATION OF CROSSBAR SWITCHES

T. O. ANDERSON

Oct. 1978

NPO-13837

Vol. 3, No. 2, p. 170

Basic switching-element configuration can be expanded to more complex networks by coupling basic building blocks in appropriate way. In all cases, binary addressing of input and output ports is used.

B78-10154

STROBE-MARGIN TEST FOR PLATED MEMORY SYSTEMS

T. E. ANSPACH (Honeywell, Inc.), J. W. CLARKE (Honeywell, Inc.), and R. C. CONSTABLE (Honeywell, Inc.)

Oct. 1978

M-FS-23838

Vol. 3, No. 2, p. 171

Technique measures performance of plated-wire memories. Strobe-margin test (SMT) utilizes worst-case testing and automatically gives exact strobe margin. Test is automatic; thus, memory system-level test is superior to tests at component level that use artificial test conditions. Test is significant tool in design and test of plated-wire memory systems. It can rapidly quantify memory-system margin on each production unit and impact of any design changes.

B78-10155

SAFE VENTING FOR ELECTRONIC COMPONENTS

R. CURRIN, JR. (Rockwell Intern. Corp.) and C. W. FISCHER (Rockwell Intern. Corp.)

Oct. 1978

MSC-18007

Vol. 3, No. 2, p. 171

Vented enclosure is made from lightweight metal. Printed-circuit boards are attached to bottom and end bulkheads and to top cover. Airflow cools components indirectly through walls of inner compartment. Flammability and smoke tests demonstrate safety of enclosure.

B78-10156**DIRECT-READING GROUP-DELAY MEASUREMENT**

D. L. TROWBRIDGE

Oct. 1978

NPO-13909

Vol. 3, No. 2, p.172

Technique for measuring modulation signal retardation in microwave components gives direct plot of dependence of delay time on carrier frequency. Recorder sensitivity can be adjusted to give convenient scale factor for group delay. From family of such recordings, it is possible to observe changes in group delay due to temperature, mechanical stress, and other factors.

B78-10157**SYNCHRONOUS TRANSFER CIRCUITS FOR REDUNDANT SYSTEMS**

S. NAGANO

Oct. 1978

NPO-14162

Vol. 3, No. 2, p 173

Circuit arrangements for flip-flops, counters, and clock drivers in redundant systems ensure that control is synchronously transferred to surviving components when failure occurs. In addition to original application to spacecraft systems, redundant circuits have terrestrial uses in power generators, solar-energy converters, computers, vehicle controllers, and other systems demanding high reliability.

B78-10158**ANALYZING CMOS/SOS FABRICATION FOR LSI ARRAYS**

A. C. IPRI (RCA Corp.)

Oct. 1978 See also NASA CR-150213 (N76-78470)

M-FS-23788

Vol. 3, No. 2, p 174

Report discusses set of design rules that have been developed as result of work with test arrays. Set of optimum dimensions is given that would maximize process output and would correspondingly minimize costs in fabrication of large-scale integration (LSI) arrays.

B78-10297**AUTOMATIC GAIN-BALANCING CIRCUIT**

D. F. EISENHUT (TRW, Inc.)

Jan. 1979 See also NASA CR-145137 (N77-19560)

LANGLEY-12074

Vol. 3, No. 3, p. 319

Energy reaching sensor is collected by telescope, modulated by chopper, spectrally filtered, and simultaneously directed onto two detectors. Gains through multiple signal paths are automatically balanced to 1 part in 10,000. Circuit compensates for slow changes in optical and electrical gains common to gas-filter correlation spectrometers.

B78-10298**HIGH-SPEED, HIGH-POWER, SWITCHING TRANSISTOR**

D. CARNAHAN (Westinghouse Electric Corp.), C. K. OHU (Westinghouse Electric Corp.), and P. L. HOWER (Westinghouse Electric Corp.)

Jan. 1979 See also NASA CR-135013 (N76-28470)

LEWIS-13021

Vol. 3, No. 3, p. 320

Silicon transistor rate for 200 angstroms at 400 to 600 volts combines switching speed of transistors with ruggedness, power capacity of thyristor. Transistor introduces unique combination of increased power-handling capability, unusually low saturation and switching losses, and submicrosecond switching speeds. Potential applications include high power switching regulators, linear amplifiers, chopper controls for high frequency electrical vehicle drives, VLF transmitters, RF induction heaters, kitchen cooking ranges, and electronic scalpels for medical surgery.

B78-10299**SIMPLE DIGITAL PULSE-PROGRAMING CIRCUIT**

J. L. LANGSTON (Texas Instruments, Inc.)

Jan. 1979

NPO-13747

Vol. 3, No. 3, p. 321

Pulse-sequencing circuit uses only shift register and Exclusive-OR gates. Circuit also serves as date-transition edge detector (for rising or falling edges). It is used in sample-and-hold, analog-to-digital conversion sequence control, multiphase clock logic, precise delay control computer control logic, edge detectors, other timing applications, and provides simple means to generate timing and control signals for data transfer, addressing, or mode control in microprocessors and minicomputers.

B78-10300**AUTOMATIC CIRCUIT INTERRUPTER**

W. S. DWINELL (Rockwell International Corp.)

Jan. 1979

MSC-16697

Vol. 3, No. 3, p. 322

In technique, voice circuits connecting crew's cabin to launch station through umbilical connector disconnect automatically unused, or deadened portion of circuits immediately after vehicle is launched, eliminating possibility that unused wiring interferes with voice communications inside vehicle or need for manual cutoff switch and its associated wiring. Technique is applied to other types of electrical actuation circuits, also launch of mapped vehicles, such as balloons, submarines, test sleds, and test chambers-all requiring assistance of ground crew.

B78-10301**EASILY-WIRED TOGGLE SWITCH**

W. T. DEAN (Rockwell International Corp.) and E. J. STRINGER (Rockwell International Corp.)

Jan. 1979

MSC-18102

Vol. 3, No. 3, p 323

Crimp-type connectors reduce assembly and disassembly time. With design, no switch preparation is necessary and socket contracts are crimped to wires inserted in module attached to back of toggle switch engaging pins inside module to make electrical connections. Wires are easily removed with standard detachment tool. Design can accommodate wires of any gage and as many terminals can be placed on switch as wire gage and switch dimensions will allow.

B78-10302**AUTOMATIC LOAD SHARING IN INVERTER MODULES**

S. NAGANO

Jan. 1979

NPO-14056

Vol. 3, No. 3, p. 324

Active feedback loads transistor equally with little power loss. Circuit is suitable for balancing modular inverters in spacecraft, computer power supplies, solar-electric power generators, and electric vehicles. Current-balancing circuit senses differences between collector current for power transistor and average value of load currents for all power transistors. Principle is effective not only in fixed duty-cycle inverters but also in converters operating at variable duty cycles.

B78-10303**HALL DEVICES IMPROVE ELECTRIC MOTOR EFFICIENCY**

W. HAEUSSERMANN

Jan. 1979

M-FS-23828

Vol. 3, No. 3, p. 325

Efficiency of electric motors and generators is reduced by radial magnetic forces created by symmetric fields within device. Forces are sensed and counteracted by Hall devices on excitation or control windings. Hall generators directly measure and provide compensating control of anu asymmetry, eliminating additional measurements needed for calibration feedback control loop.

B78-10304**IMPROVED DRIVER FOR CAPACITIVE LOADS**

R. T. MATSUMOTO (Rockwell Intern. Corp.)

Jan. 1979

LANGLEY-11609

Vol. 3, No. 3, p. 326

Bias resistors with large voltage swings are replaced by transistorized current sources and bias currents are reduced to level where beta of devices is acceptable. Innovation has other applications in circuits driving pulsed capacitive loads.

01 ELECTRONIC COMPONENTS AND CIRCUITS

B78-10305

Z-AXIS CONTROL LOOP FOR CATHODE-RAY TUBES

A. J. RAY, JR. (Ball Bros. Res. Corp.)

Jan. 1979

NPO-13775

Vol. 3, No. 3, p. 324

Inexpensive PIN diode detector samples screen brightness between camera frames generating error signal for feedback control of intensity. System was tested by taking flat-field exposures at several density levels over 4 hour period. Results showed processed film density levels varied by less than + or - 10 percent usually centering around + or - 8 percent.

B78-10306

THREE-FUNCTION SIGNAL GENERATOR

G. F. KOPP (Honeywell, Inc.)

Jan. 1979

MSC-16672

Vol. 3, No. 3, p. 328

Variable-frequency circuit develops sine square and triangular waveforms. Three-function generator used variable-rate integrator to generate triangular wave and zero-crossing detector to develop square wave. Sine wave generator uses diode matrix to operate on triangular wave, thus with design harmonic distortion in output is less than one percent. By changing values of outboard resistors and capacitors, same design can be used at higher frequencies.

B78-10307

POWER-SWITCH DV/DT SENSING

R. L. JONES

Jan. 1979

MSC-16707

Vol. 3, No. 3, p. 329

Simple means for controlling voltage risetime and powerline noise used three transistors and capacitive feedback. Rate of change of voltage across load is reduced and controlled by circuit. Circuit is useful in situations where large wire bundles are subject to noise and crosstalk due to rapid current switching.

B78-10308

PHASE-SHIFT ARRAY, ARBITRARY AND CONTINUOUS THROUGH 360 DEG

A. C. DIBBLE, JR. and R. E. GRANDLE

Jan. 1979

LANGLEY-12272

Vol. 3, No. 3, p. 330

Langley Research Center's Phase-shift array satisfies requirement to phase shift common source signal into array of branch circuits thus simplifying multiple phase control. With system, wiring and assembly are uncomplicated, requiring no switching networks and system can be operated at any desired frequency. Design provides effective solution to problem of multiple shift control.

B78-10309

IMPLEMENTING OQASK BY USING MSK

M. K. SIMON

Jan. 1979

NPO-13896

Vol. 3, No. 3, p. 331

Concept simplifies implementation of offset quadrature amplitude-shift-keyed signal when encoding digital information for transmission. Although originally developed for deep-space radio transmission, concept can find applications in various band-width constrained systems and in digital radio communications. Also is particularly useful in high volume data transmission as means of encoding and decoding.

B78-10310

TERRESTRIAL PHOTOVOLTAIC MEASUREMENTS

H. W. BRANDHORST, JR. and H. B. CURTIS

Jan. 1979 See also NASA CP-2010 (N77-30521); NASA-TM-73788 (N78-14629); NASA-TM-73702 (N77-29603)

LEWIS-13057

Vol. 3, No. 3, p. 331

Revised measurement and calibration procedures are available. ERDA workshop utilized experience gained in solar cell research to define and explore additional measurement needs of photovoltaic community. Interim measurement procedures previously established were revised and published in manual in addition to other procedures.

B78-10311

CMOS-ARRAY DESIGN-AUTOMATION TECHNIQUES

A. FELLER (RCA Corp.) and T. LOMBARDT (RCA Corp.)

Jan. 1979 See also NASA-CR-150221 (N77-78784)

M-FS-23762

Vol. 3, No. 3, p. 322

Thirty four page report discusses design of 4,096-bit complementary metal oxide semiconductor (CMOS) read-only memory (ROM). CMOSROM is either mask or laser programmable. Report is divided into six sections; section one describes background of ROM chips; section two presents design goals for chip; section three discusses chip implementation and chip statistics; conclusions and recommendations are given in sections four thru six.

B78-10448

MULTICHANNEL VCO NEEDS ONLY ONE REFERENCE

R. K. MASSON (Hughes Aircraft Co.) and N. P. MORENC (Hughes Aircraft Co.)

Mar. 1979

MSC-18225

Vol. 3, No. 4, p. 471

Frequency stabilizing circuit controls output of multichannel microwave oscillator using passband filters and selector logic to eliminate need for separate crystal diode voltage controlled oscillator (VCO).

B78-10449

ARC DETECTOR USES FIBER OPTICS

E. J. FINNEGAN and R. A. LEECH

Mar. 1979

NPO-13377

Vol. 3, No. 4, p. 472

Arc detector for protecting high-power microwave klystron oscillators uses fiber optics connected to remote solid-state light-sensing circuits. Detector is more reliable, smaller, and sensitive than other systems that locate detector in waveguide.

B78-10450

MINIATURE KU-BAND DOWN CONVERTER

D. A. NORBURY (Avantek, Inc.)

Mar. 1979

MSC-18313

Vol. 3, No. 4, p. 473

Hybrid circuit serves as receiver front end for 13.75- to 14.0-GHz communications and radar systems. Complete microwave integrated circuit (MIC) assembly is packaged in small hermetically welded, nitrogen-filled aluminum case. Simplicity and size proves useful for lower-frequency wideband applications.

B78-10451

TESTING INTEGRATED CIRCUITS BY PHOTOEXCITATION

J. J. ERICKSON (Hughes Aircraft Co.) and M. E. LEVY (Hughes Aircraft Co.)

Mar. 1979

M-FS-23943

Vol. 3, No. 4, p. 474

System for testing integrated circuits uses photoexcitation to determine quality of internal elements inaccessible to electrical tests. Approach prevents direct monitoring of internal operation of circuit by measurements at external terminals and is superior to electron beam scanning due to nondestructiveness.

B78-10452

PRECISE MATCHING OF DIODES

W. T. MCCLYMAN

Mar. 1979

NPO-14293

Vol. 3, No. 4, p. 475

Two circuit arrangements using ac and dc power source provide low-cost method for matching forward voltage drops of diodes and other semiconductors. Both circuits are simpler and less expensive than conventional, characteristic-curve tracers.

B78-10453

SPlicing SHIELDED CABLES

W. P. LIND (Rockwell Intern. Corp.) and W. R. MCGOUGAN (Rockwell Intern. Corp.)

Mar. 1979

MSC-18297

Vol. 3, No. 4, p. 476

B78-10454**MODULAR GROUND-WIRE CONNECTOR**

W. T. DEAN (Rockwell Intern. Corp.) and E. J. STRINGER (Rockwell Intern. Corp.)

Mar. 1979

MSC-16633

Vol. 3, No. 4, p. 477

Chassis-mounted module makes it easy to remove and attach ground wires. With module, more ground connections are made in smaller area and no terminal lugs, lockwashers, or locknuts are required. Device also reduces holes that are punched or drilled in chassis for ground connections.

B78-10455**ELECTRICAL-GROUND MONITOR**

T. D. LYONS (Lockheed Electronics Co.)

Mar. 1979

MSC-18281

Vol. 3, No. 4, p. 477

Instrument for detecting short circuits monitors ground connections and sounds alarm if out-of-limits condition occurs. Circuit includes electronics that prevent false triggering by high-resistance or capacitive paths and other noise.

B78-10456**ONE-THIRD SELECTION FOR MATRIX-ADDRESSING FERROELECTRICS**

L. E. TANNAS, JR. (Rockwell Intern. Corp.)

Mar. 1979

LANGLEY-11993

Vol. 3, No. 4, p. 479

Automatic-gain-control (AGC) circuit regulates gain of intermediate frequency and radio-frequency signals over wide dynamic range with high linearity and very low phase shift. Potential application include radio and television receivers, signal distribution systems, and test and measurement instruments.

B78-10457**SIMPLIFIED PHASE DETECTOR**

L. M. HERSHEY

Mar. 1979

NPO-13395

Vol. 3, No. 4, p. 480

Tanlick sine-wave phase detector gives dc output voltage nearly proportional to phase difference between oscillator signal and reference signal. Device may be used for systems in which signal-to-noise ratio is high.

B78-10458**DIGITAL CORRELATOR WITH FEWER IC'S**

G. G. APPLE (TRW, Inc.) and L. RUBIN (TRW, Inc.)

Mar. 1979

MSC-16743

Vol. 3, No. 4, p. 481

Digital correlator requires only few integrated circuits to determine synchronization of two 24-bit digital words. Circuit is easily reduced or expanded to accommodate shorter or longer words and can be utilized in industrial and commercial data processing and telecommunications.

B78-10459**PULSE-WIDTH-MODULATED ATTENUATOR FOR AGC**

J. W. MACCONNELL

Mar. 1979

NPO-14127

Vol. 3, No. 4, p. 483

Automatic-gain-control (AGC) circuit regulates gain of intermediate-frequency and radio-frequency signals over wide dynamic range with high linearity and very low phase shift. Device has potential uses in radio and television receivers, signal distribution systems, and test and measurement instruments.

B78-10460**OVERLOAD PROTECTION SYSTEM**

S. NAGANO

Mar. 1979

NPO-13872

Vol. 3, No. 4, p. 484

Overload protection circuit utilizes one circuit for suspending inverter action when load abnormality is detected and second circuit to monitor clearance of abnormality. Device wastes no power during normal operating conditions and responds instantaneously when abnormality is cleared.

B78-10461**LOAD BALANCING MULTIMODULE SWITCHING POWER CONVERTERS**

W. T. MCLYMAN and G. W. WESTER

Mar. 1979

NPO-13832

Vol. 3, No. 4, p. 485

Regulating system individually adjusts duty cycles of modules so that all share load equally, thus, protects individual modules and their components from overload and increases reliability and life expectancy. Converters are alternative to high-power, single unit systems.

B78-10462**ELIMINATING GOLD MIGRATION IN MICROCIRCUITS**

A. DERMARDEROSIAN (Raytheon Co.) and C. R. MURPHY (Rockwell Intern. Corp.)

Mar. 1979

MSC-18213

Vol. 3, No. 4, p. 486

Report discusses how effects of moisture and other factors causing bridging between conductors can be prevented. Study details how several factors such as contaminants, large packages, high voltage, narrow conductor spacing and temperature contribute to moisture problems.

02 ELECTRONIC SYSTEMS

B78-10013**VIDEO SCRAMBLER/DESCRAMBLER**

P. C. LIPOMA (Lockheed Electronics Co., Inc.) and K. H. VORHABEN (Lockheed Electronics Co., Inc.)

Jun. 1978

MSC-16843

Vol. 3, No. 1, p. 17

Video scrambler that operates on baseband signals uses relatively simple delay and inversion circuitry to alter television signal so that it is unrecognizable when picked up on TV monitor. Descrambler that uses essentially same circuit restores signal and allows original video information to be retrieved. Circuits allow only authorized parties to have access to transmitted information.

B78-10014**ACCURATE POSITIONING OF CHARACTERS ON CRT DISPLAYS**

J. R. DAMIAN (IBM, Corp.)

Jun. 1978

MSC-16505

Vol. 3, No. 1, p. 18

Two systems, one digital and one analog, improve positioning of characters in cathode-ray tube (CRT) display systems. Circuits minimize effects of amplifier settling times--effects that can displace and distort characters in high-speed multiplexed systems.

B78-10015**COMPUTER INTERFACE FOR MECHANICAL ARM**

W. L. DEROCHE (Martin Marietta Corp.) and R. O. ZERMUEHLEN (Martin Marietta Corp.)

Jun. 1978

M-FS-23849

Vol. 3, No. 1, p. 20

Man/machine interface commands computer-controlled mechanical arm. Remotely-controlled arm has six degrees of freedom and is controlled through 'supervisory-control' mode, in which all motions of arm follow set of preprogrammed sequences. For simplicity, few prescribed commands are required to accomplish entire operation. Applications include operating computer-controlled arm to handle radioactive or explosive materials or commanding arm to perform functions in hostile environments. Modified version using displays may be applied in medicine.

B78-10016**CALIBRATION METHOD FOR AN ULTRASONIC GRAY-**

02 ELECTRONIC SYSTEMS

SCALE RECORDER

P. E. MOORHEAD
Jun. 1978

LEWIS-12782

Vol. 3, No.1, p. 20

Calibrated method for ultrasonic C-scanning is based on direct correlation of gray-scale response to electronic signal used. In procedure, optical density of reference recording is measured to generate curve of reflective intensity versus transmission.

B78-10017

HIGH-RESOLUTION GRAY-SCALE RECORDER

P. E. MOORHEAD, T. M. DAVIS, and R. L. SORG
Jun. 1978

LEWIS-12783

Vol. 3, No.1, p. 22

Electronic circuit makes it possible to obtain gray-scale recordings with good contrast and linearity over entire recording density range for ultrasonic testing unit. Electronic circuit produces square wave of constant voltage but of varying width. Frequency of square-wave pulses can be adjusted to determine optimum pulse frequency.

B78-10018

MULTIPLE-INPUT LAND-USE SYSTEM CONCEPT

F. C. BILLINGSLEY, N. A. BRYANT, and A. L. ZOBRIST
Jun. 1978

NPO-13903

Vol. 3, No. 1, p. 23

Image based information system would accept data in a variety of formats and convert it to registered raster-scan with single format. Images could then be manipulated by system processor to read out desired information. Existing methods of digital-image processing could be modified to develop necessary software and hardware needed to implement system.

B78-10019

MICROSTRIP BACKFIRE ANTENNA

T. G. CAMPBELL and N. V. COHEN (Old Dominion Univ.)
Jun. 1978

LANGLEY-12172

Vol. 3, No. 1, p. 24

Microstrip resonator is improvement over dipole-fed waveguide-fed backfire designs. Advantages include simpler construction with reduction in weight and size over other backfire designs. Microstrip backfire concept has potential in dual-polarization antenna systems, array-thinning designs, and feed designs for larger parabolic reflectors.

B78-10020

TEST-VEHICLE CYCLE PROGRAMMER

D. J. LESCO and R. F. SOLTIS
Jun. 1978

LEWIS-12977

Vol. 3, No. 1, p. 24

Instrument reduces manpower needed for testing electric powered vehicles. Device has dual scale that allows operator to compare actual speed with preprogrammed test speed. Features include large meter, buzzer, packaging to allow ready interchange of memories with different profiles, small size, minimal current drain, and reverse supply voltage protection.

B78-10021

OPTICAL TRAFFIC-SENSING CONCEPT

A. R. JOHNSTON and K. SHIMADA
Jun. 1978

NPO-13603

Vol. 3, No. 1, p. 26

Scaled-up optical proximity detector is versatile traffic sensor that replaces or augments existing systems such as inductive loops. Photosensor which does not depend on ambient light has several features that protect it against spurious or ambiguous inputs. It could be implemented in several forms to cope with different roadway conditions.

B78-10022

VOICE-OUTPUT SOLAR ENERGY REPORTER

B. L. DETERMAN and R. L. MILLER
Jun. 1978

LEWIS-12947

Vol. 3, No. 1, p. 27

Reporter combines commercially available equipment to sense solar energy and measure instantaneous intensity and accumulated

energy at remote site. Data are encoded in voice form and stored for retrieval at any time by commercial telephone.

B78-10023

SIMPLIFIED DATA COMPRESSOR

R. F. RICE, V. C. TYREE, and C. WU
Jun. 1978

NPO-14041

Vol. 3, No. 1, p. 28

Image data are compressed for transmission by simple, economical circuitry. Compressor handles data in blocks of 64 samples. Mean from previous line is subtracted, and pseudo-random sequence of positive and negative 1's multiplies samples of each block. Hadamard transform applied to blocks yields 64 transform coefficients. Each coefficient is compared with approximation to corresponding coefficient of previous line, and difference is quantized. Values are transmitted or stored. Procedure is reversed to reproduce image.

B78-10024

PREVENTING RADIO-PAGING SYSTEM TIEUP

J. P. JASMIN (Rockwell International Corp.)
Jun. 1978

MSC-19696

Vol. 3, No. 1, p. 29

Time-delay relay limits message time of emergency radio-paging system, thereby preventing inadvertent tieup. Relay is connected with telephone circuit and permits adjustable message time between 30 and 55 seconds. After that time interval, relay opens, making line free for another paging regardless of what previous caller did with his telephone.

B78-10025

HYBRID RANDOM-SOUND TEST-CONTROL SYSTEM

R. C. WOODBURY
Jun. 1978

NPO-13900

Vol. 3, No. 1, p. 30

Controller develops gain-control signals by comparing detected sound levels in each band with reference set levels. By eliminating multiplexing network and single clock used in digital system, design allows servocontrol rate for each band to be adjusted independently.

B78-10026

SELF-NAVIGATING ROBOT

A. M. THOMPSON
Jun. 1978

NPO-14190

Vol. 3, No. 1, p. 31

Rangefinding equipment and onboard navigation system determine best route from point to point. Research robot has two TV cameras and laser for scanning and mapping its environment. Path planner finds most direct, unobstructed route that requires minimum expenditure of energy. Distance is used as measure of energy expense, although other measures such as time or power consumption (which would depend on the topography of the path) may be used.

B78-10159

FINDING RADIANT-ENERGY SOURCES

G. J. SCHAFFER (Hughes Aircraft Co.)
Oct. 1978 See also B77-10264

GSFC-12147

Vol. 3, No. 2, p. 177

Antenna is scanned in orthogonal directions to pinpoint interfering sources. Satellite system locates ground-based microwave transmitter to accuracy of about 100 miles. When data on misalignment of satellite antenna boresight are used to correct antenna pointing, accuracy is improved to better than 70 miles.

B78-10160

NOISE TOLERANT COMPUTER LINK

M. W. SIEVERS
Oct. 1978

NPO-14152

Vol. 3, No. 2, p. 178

Inexpensive computer-to-computer link facilitates data communication in electrically noisy environments. Link can connect process-control computers while reducing errors from electrical noise of manufacturing operations.

B78-10161**HUMAN ARM MAY ACT AS ANTENNA**

J. C. GADDIE (Stanford Res. Inst.) and R. T. WOLFRAM (Stanford Res. Inst.)

Oct. 1978

ARC-11195**Vol. 3, No. 2, p. 178**

Wrist strap with copper strips is used as coupler of radio-frequency energy. Wires at midpoints of strips lead to radio-frequency device that acts as transmitter or receiver. Varying widths of copper strips produces somewhat different characteristics.

B78-10162**FEMTOSECOND TIME-DOMAIN PHASE COMPARATOR**

T. DONAHOE and V. REINHARDT

Oct. 1978

GSFC-12228**Vol. 3, No. 2, p. 180**

Phase shift in test device is measured by summing output of mixer with ramp voltage and comparing time interval between zero crossings of summed signal and ramp reference frequency. Circuit can be used to test devices at other frequencies by changing only signal source, phase splitter, and mixer; divider and time-interval counter need not be driven by oscillator.

B78-10163**CHOPPER-STABILIZED PHASE DETECTOR**

P. M. HOPKINS (Lockheed Elec. Co.)

Oct. 1978

MSC-16461**Vol. 3, No. 2, p. 181**

Phase-detector circuit for binary-tracking loops and other binary-data acquisition systems minimizes effects of drift, gain imbalance, and voltage offset in detector circuitry. Input signal passes simultaneously through two channels where it is mixed with early and late codes that are alternately switched between channels. Code switching is synchronized with polarity switching of detector output of each channel so that each channel uses each detector for half time. Net result is that dc offset errors are canceled, and effect of gain imbalance is simply change in sensitivity.

B78-10164**BIT-SYNCHRONIZER LOCK DETECTOR**

D. C. HUEY (TRW, Inc.) and B. A. ITRI (TRW, Inc.)

Oct. 1978

MSC-16744**Vol. 3, No. 2, p. 182**

Circuit measures phase error that exists in phase-locked loop between clock signal recorded in data on magnetic tape and reconstructed clock signal. Circuit presents error as digital word that can be compared with predetermined threshold to indicate lock status. With simple alterations, circuit can also be used as phase detector.

B78-10165**AUTOMATIC RADIO-TRANSMISSION MONITOR**

A. J. BERNSTEIN

Oct. 1978

NPO-13941**Vol. 3, No. 2, p. 183**

System continuously monitors radio transmissions stored in memory. If spectrum deviates beyond present limits, alarm is tripped and spectrum is transferred to long-term storage for later analysis. Monitor can be useful in ensuring proper power level and spectral quality and in finding cause of failure. It might also be used to monitor radio-frequency interference or power levels of citizen's-band transmitters.

B78-10166**CONTROL OF SMALL PHASED-ARRAY ANTENNAS**

G. D. DOLAND (Lockheed Elec. Co.)

Oct. 1978

MSC-14938**Vol. 3, No. 2, p. 184**

Series of reports, patent descriptions, calculator programs, and other literature describes antenna control and steering apparatus for seven-element phased array. Though series contains information specific to particular system, it illustrates methods that can be applied to antennas with greater or fewer numbers of elements. Included are programs for calculating beam

parameters and design functions and information to interfacing digital controller to beam-steering apparatus.

B78-10312**AUTOMATIC ACQUISITION AND RANGING SYSTEM**

R. M. GOLDSTEIN, W. P. HUBBARD, J. W. LAYLAND, W. L. MARTIN, and A. I. ZYGIELBAUM

Jan. 1979

NPO-13982**Vol. 3, No. 3, p. 335**

Digital circuitry automatically demodulates received radio-frequency ranging signals for phase comparison with transmitted signal. All digital circuitry makes system more stable than analog predecessor and makes automatic operation easier and simpler.

B78-10313**AIR-TRAFFIC SURVEILLANCE SYSTEMS**

P. F. MACDORAN

Jan. 1979

NPO-14173**Vol. 3, No. 3, p. 336**

Passive ground-based radio-interferometry systems (RILS) monitor local air traffic by determining aircraft position in planes defined by surveillance area. Similar RILS arrangements are used to determine aircraft positions in three dimensions when combined with azimuth and range information obtained by radar. Information helps determine three-dimensional aircraft position without expensive encoding altimeters.

B78-10314**OPTIMIZING MULTISLOT FEEDS FOR REFLECTING ANTENNAS**

D. K. WAINEO (Rockwell Intern. Corp.)

Jan. 1979

NPO-14064**Vol. 3, No. 3, p. 337**

Multislot feed corrects phase errors in reflecting antennas. Variables are reduced by considering symmetry and corrective effect of each phase mode. Overall computation concerning calculation of correct phase angles while optimizing main beam efficiency is simplified by analysis used parabolic torus reflector aboard Space Shuttle.

B78-10315**28-BIT SERIAL WORD SIMULATOR/MONITOR**

J. W. DURBIN (Rockwell Intern. Corp.)

Jan. 1979

MSC-16418**Vol. 3, No. 3, p. 338**

Modular interface unit transfers data at high speeds along four channels. Device expedites variable-word-length communication between computers. Operation eases exchange of bit information by automatically reformatting coded input data and status information to match requirements of output.

B78-10316**PORTABLE DATA SYSTEM**

M. DIX

Jan. 1979

ARC-11136**Vol. 3, No. 3, p. 339**

Compact system for data recording, manipulation, and transmission uses readily available components. Data system originally designed for high-altitude research is used with appropriate sensors to monitor transportation systems, biomedical data, weather stations, mineral exploration equipment, and various other tasks.

B78-10317**MICROWAVE-BEAM SAFETY SUBSYSTEM**

R. M. DICKINSON

Jan. 1979

NPO-14224**Vol. 3, No. 3, p. 340**

Airspace between high-power microwave transmitters and receivers is dangerous to people, equipment, or birds flying in area. Hazard is reduced or eliminated by subsystem that monitors area and interrupts or alters microwave transmission during accidental intrusions.

B78-10463**NARROW-BANDWIDTH RECEIVER**

02 ELECTRONIC SYSTEMS

E. A. MANUS (Virginia Polytechnic Institute and State University) and P. H. WILEY (Virginia Polytechnic Institute and State University)
Mar. 1979

GSFC-12142

Vol. 3, No. 4, p. 489

Synchronous switching circuit reduces bandwidth and improves sensitivity of communications receiver. With modified receiver, signals 35 db below level can be detected.

B78-10464

MEASURING RADIO-SIGNAL POWER ACCURATELY

R. M. GOLDSTEIN, J. W. NEWTON, and R. A. WINKELSTEIN
Mar. 1979

NPO-13373

Vol. 3, No. 4, p. 490

Absolute value of signal power in weak radio signals is determined by computer-aided measurements. Equipment operates by averaging received signal over several-minute period and comparing average value with noise level of receiver previously calibrated.

B78-10465

DETERMINING THE RESPONSE OF AN FM RECEIVER

J. C. PERRY (Lockheed Electronics Co.)

Mar. 1979

MSC-16751

Vol. 3, No. 4, p. 491

Frequency response to frequency-modulation (FM) receiver is measured with aid of phase-modulation (PM) transmitter by applying correction to output power level. As modulating frequency is increased, output level obtained in response to PM input is reduced by 6 db per octave.

B78-10466

MORE EFFICIENT MICROWAVE-POWER TRANSMISSION

R. M. DICKINSON and W. T. BROWN (Raytheon Co.)

Mar. 1979

NPO-13885

Vol. 3, No. 4, p. 492

Small improvements in magnetron, receiving diodes, radiating antennas, and circulator sections of components add sizable improvement in microwave system efficiency. Further improvements in future are possible by adding new materials and designs to RF-to-dc converter-or removal of circulator, power supply and redesigning of magnetron to tolerate low or high power levels.

B78-10467

EFFICIENT DIGITAL ENCODING SCHEME

D. E. OBRIEN, III

Mar. 1979

MSC-18267

Vol. 3, No. 4, p. 493

Modified NRZ (non-return-to-zero) code immunizes record and playback systems against dc drift and bit slippage. In order to maximize bit packing density improved code called J-NRZ gives 100 percent NRZ efficiently and solves DC drift problem by adding check bits in specified format when long string is encountered. Remainder of data stream is encoded in NRZ format.

B78-10468

WIDEBAND DIGITAL SPECTRUM ANALYZER

G. A. MORRIS, JR. and H. C. WILCK

Mar. 1979

NPO-14394

Vol. 3, No. 4, p. 494

Modular spectrum analyzer consisting of RF receiver, fast Fourier transform spectrum analyzer, and data processor samples stochastic signals in 220 channels. Construction reduces design and fabrication costs of assembled unit.

B78-10469

ELIMINATING AMBIGUITY IN DIGITAL SIGNALS

W. J. WEBER, III

Mar. 1979

NPO-14289

Vol. 3, No. 4, p. 495

Multiamplitude minimum shift keying (mamsk) transmission system, method of differential encoding overcomes problem of ambiguity associated with advanced digital-transmission techniques with little or no penalty in transmission rate, error rate, or system complexity. Principle of method states, if signal points are properly encoded and decoded, bits are detected correctly, regardless of phase ambiguities.

B78-10470

DATA REFORMATTING WITH LESS HARDWARE

A. ENGEL and L. R. SPRINGER

Mar. 1979

NPO-13676

Vol. 3, No. 4, p. 496

Dual-function integrated circuits use one shift register array instead of two to feed video data to seven tape channels thereby making system more reliable and less expensive than predecessor. Basic principle of reformatter is also applicable to multiplexing and frequency conversion circuits.

B78-10471

EFFICIENT RECTIFYING ANTENNA

R. M. DICKINSON and W. C. BROWN (Raytheon Co.)

Mar. 1979

NPO-13884

Vol. 3, No. 4, p. 497

Rectifying antenna comprised of 17 subarrays positioned closely together to intercept microwave beam features low cost, high conversion efficiency, and high power handling capability. Tests demonstrate efficiency level of 82 percent in converting RF to dc.

B78-10472

LIGHTWEIGHT CONICAL ANTENNA REFLECTOR

D. M. MOORE

Mar. 1979

NPO-13552

Vol. 3, No. 4, p. 499

Conical antenna reflectors using knitted mesh materials for aluminized film eliminate problem areas in thermal distortion and long term stability when film is subjected to ultraviolet radiation. Meshes may be selected from wide selection of yarns to form mesh membrane.

B78-10473

COMPACT ANTENNA HAS SYMMETRICAL RADIATION PATTERN

E. A. KUHLMAN (McDonnell-Douglas Corp.) and E. D. MCKEE (McDonnell-Douglas Corp.)

Mar. 1979

ARC-11189

Vol. 3, No. 4, p. 500

Compact quadrifilar-helix antenna has exceptionally uniform and axially symmetric radiation pattern. It resists shock and vibration and gives excellent radiation characteristics which make it potentially useful for mobile citizenband radios and other terrestrial communications systems.

B78-10474

MULTIPLEXED BATTERY-BYPASS CONTROL SYSTEM

J. C. BENNETT, H. A. FRANK, J. LEPISTO, and A. P. WAGNER

Mar. 1979 See also NASA-CR-155271 (N78-12317)

NPO-14414

Vol. 3, No. 4, p. 501

Cell-bypass control system senses low capacity cells before they overcharge or discharge. Relay automatically removes defective cell (when it is detected) from battery circuit. System shows promise for improving batteries in computer standby power systems, electric vehicles, and energy storage systems.

B78-10475

SYSTEM FOR MONITORING LIGHTNING STRIKES

J. C. FUCAS and R. J. WOJTASTNSKI

Mar. 1979

KSC-11018

Vol. 3, No. 4, p. 502

System for monitoring lightning strikes utilizes optical data link between lightning sensor and recording instruments thus making data link immune to electrical interference induced in wires by huge burst of energy in lightning strikes. It also protects people and equipment at data receiving end from electrical shock.

B78-10476

TELECOMMUNICATIONS NETWORK OPTIMIZATION

J. LEE

Mar. 1979

NPO-14486

Vol. 3, No. 4, p. 504

Analysis discusses STACOM (state criminal justice communication) network topology program used to design and evaluate digital telecommunications networks STACOM employs ESAU-

WILLIAMS technique to search for direct links between system terminations and regional switching center. Inputs include traffic data, terminal locations, and functional requirements.

03 PHYSICAL SCIENCES

B78-10027

IMPROVED OPTICAL FILTER

A. M. TITLE (Lockheed Missiles & Space Co., Inc.)

Jun. 1978

GSFC-12225

Vol. 3, No. 1, p. 35

Filter includes partial polarizer between birefringent elements. Plastic film on partial polarizer compensates for any polarization rotation by partial polarizer. Two quarter-wave plates change incident, linearly polarized light into elliptically polarized light.

B78-10028

HOUSING PROTECTS LASER IN VACUUM

V. G. CANALI

Jun. 1978

GSFC-12241

Vol. 3, No. 1, p. 36

Airtight housing encloses laser for easy alignment and operation in high-vacuum chamber. Beam is transmitted through window into vacuum chamber. Flexible line runs through vacuum chamber to outside, maintaining laser enclosure at atmospheric pressure.

B78-10029

DIRECTIONAL LASER VELOCIMETER WITH DOPPLER VELOCITY SIMULATOR

J. M. FRANKE

Jun. 1978

LANGLEY-12176; LANGLEY-12177

Vol. 3, No. 1, p. 36

Technique uses phase-shift networks at optical and baseband frequencies and, as such, is optical adaptation of previously-existing microwave technology. Application is planned for wind-tunnel velocity measurements. Alternative configuration produces finite fringes that move in one direction or other as measured particle approaches or recedes.

B78-10030

FLUORESCENT PAINT SIMPLIFIES LASER-BEAM ALIGNMENT

H. A. WILL

Jun. 1978

LEWIS-12571

Vol. 3, No. 1, p. 38

Usually to align optics safely, low power laser which can safely operated without safety goggles is substituted for higher power laser during alignment procedure. Need for lower power substitute laser can be eliminated by painting target area with commercial paint which fluoresces strongly in red or yellow portion of spectrum when excited by argon laser beam.

B78-10031

GLASS TUBES FOR PROTECTING SOLAR CELLS

B. SHELPUK (RCA Corp.)

Jun. 1978

NPO-14200

Vol. 3, No. 1, p. 38

Protecting solar cells against environmental effects is accomplished by putting them inside glass tubes instead of hermetically sealing them between pairs of flat glass sheets. If cells are coupled with storage battery integrated into tube, freestanding power source could be built.

B78-10032

HIGH-TEMPERATURE SOLAR CONVERTER

G. ASCHER

Jun. 1978

GSFC-12234

Vol. 3, No. 1, p. 39

Converter has parabolic concentrator that directs sunlight

on three-dimensional absorber assembly within an evacuated glass cylinder. No tracking mechanism is required. Concentrator aperture is adjustable to modify concentration in direct or diffuse sunlight. Range of adjustment is small.

B78-10033

DOUBLE-SIDED SOLAR-CELL PACKAGE

B. SHELPUK (RCA Corp.)

Jun. 1978

NPO-14199

Vol. 3, No. 1, p. 40

Cost-effective solar-cell package is proposed for development of practical solar-cell system. Since cells are enclosed in inexpensive plastic tubes, forced-air-cooling loop is proposed to maintain cell temperature at adequate levels. Loop must include desiccant to remove moisture from hermetic enclosures to prevent cell corrosion.

B78-10034

REAL-TIME MONITORING OF CRUSTAL DEFORMATIONS

P. F. MACDORAN

Jun. 1978

NPO-14124

Vol. 3, No. 1, p. 42

System with two radio interferometer systems is used to detect crustal bulging of Earth's surface, which may be directly related to earthquakes.

B78-10035

FLAT-PLATE HEAT PIPE

G. L. FLEISCHMAN (TRW, Inc.) and B. D. MARCUS (TRW, Inc.)

Jun. 1978

GSFC-11998

Vol. 3, No. 1, p. 43

Heat pipe has its working fluid sealed between two flat panels rather than in conventional cylindrical housing. Metal wick is installed between planes to provide continuous fluid path in cooperation with capillary grooves on inside surfaces of plates. Heat pipe is easily coupled to flat surfaces such as integrated circuit substrates, mirrors, and electronic cold plates and is more effective than conventional heat pipes when removing heat in these applications.

B78-10036

VIDEO METHOD FOR STUDYING OPTICAL FIELDS

R. S. MEZRICH (RCA Corp.)

Jun. 1978

M-FS-23103

Vol. 3, No. 1, p. 44

Approach for measuring intensity distribution in optical field records pattern with vidicon and then displays it on oscilloscope, using vertical sweep as trigger. Single horizontal lines in field can be isolated by using sweep delay feature of oscilloscope.

B78-10037

SOLAR-ENERGY BIBLIOGRAPHY

S. GARGUS

Jun. 1978 See also NASA TM-X-73398(N78-13554)

M-FS-23823

Vol. 3, No. 1, p. 44

Bibliography lists over 100 ongoing projects, Tech Briefs, papers and periodicals, and technical reports and patents pertaining to work performed at Marshall Space Flight Center and by its contractors. Each item includes brief summary or abstract of work, its publication date (except for ongoing research), and a listing of other materials related to that work. Comprehensive subject index is also included.

B78-10167

IMPROVED 'SPECTROPHONE'

J. S. MARGOLIS and M. S. SHUMATE

Oct. 1978

NPO-14143

Vol. 3, No. 2, p. 187

Spectral lines of gas sample are modulated by electric field in optoacoustic gas analyzer. Pressure fluctuations caused by local heating of absorbing gas are picked up by microphone. Since laser is operated in continuous-wave (CW) mode, background noise due to heating of windows is eliminated.

B78-10168

LOW-BACKGROUND TRACE-GAS DETECTOR

03 PHYSICAL SCIENCES

L. ROSENGREN

Oct. 1978

NPO-13683

Vol. 3, No. 2, p. 188

Spectrophone detects very small concentrations of trace gases. With gas in sample cell, laser is tuned to absorption line of interest. Molecular absorption in cell produces pulsed acoustical pressure at chopper frequency. Two optical paths with very different absorption lengths are used to pretune cell to balance out background absorption by cell windows.

B78-10169

VIBRATION-FREE THERMAL LINK

D. E. JENNINGS

Oct. 1978

GSFC-12297

Vol. 3, No. 2, p. 188

System designed to hold laser at temperature of cold tip of helium refrigerator uses thermally-conducting flexible straps and special layered support structure.

B78-10170

PRACTICAL AND EFFICIENT MAGNETIC HEAT PUMP

G. V. BROWN

Oct. 1978 See also NASA TM-X-73676 (N77-26616)

LEWIS-12508

Vol. 3, No. 2, p. 190

Method for pumping heat magnetically at room temperature is more economical than existing refrigeration systems. Method uses natural magneto-thermal effect of gadolinium metal to establish temperature gradient across length of tube. Regenerative cyclic process in which gadolinium sample is magnetized and gives off heat at one end of tube, and then is demagnetized at other end to absorb heat has established temperature gradients of 144 degrees F in experiments near room temperature. Other materials with large magnetothermal effects can be used below room temperature. Possible commercial applications include freeze-drying and food processing, cold storage, and heating and cooling of buildings, plants, and ships.

B78-10171

PROTECTIVE COATING FOR LASER DIODES

I. LADANY (RCA Corp.) and J. L. VOSSER, JR. (RCA Corp.)

Oct. 1978

LANGLEY-11746

Vol. 3, No. 2, p. 191

Coating for GaAs laser diodes should not alter optical and electrical properties. Borosilicate glass coating is easy to apply, breaks evenly when cleaved, and is abrasion and moisture resistant. Its low index of refraction makes thickness less critical when depositing half-wavelength coating.

B78-10172

INFRARED-ENHANCED TV FOR FIRE DETECTION

J. R. HALL (Rockwell Intern. Corp.)

Oct. 1978

M-FS-19380

Vol. 3, No. 2, p. 191

Closed-circuit television is superior to conventional smoke or heat sensors for detecting fires in large open spaces. Single TV camera scans entire area, whereas many conventional sensors and maze of interconnecting wiring might be required to get same coverage. Camera is monitored by person who would trip alarm if fire were detected, or electronic circuitry could process camera signal for fully-automatic alarm system.

B78-10173

WIDE ANGLE PINHOLE CAMERA

J. M. FRANKE

Oct. 1978

LANGLEY-11905

Vol. 3, No. 2, p. 192

Hemispherical refracting element gives pinhole camera 180 degree field-of-view without compromising its simplicity and depth-of-field. Refracting element, located just behind pinhole, bends light coming in from sides so that it falls within image area of film. In contrast to earlier pinhole cameras that used water or other transparent fluids to widen field, this model is not subject to leakage and is easily loaded and unloaded with film. Moreover, by selecting glass with different indices of refraction, field at film plane can be widened or reduced.

B78-10174

LASER BEAM COLOR SEPARATOR

J. M. FRANKE

Oct. 1978

LANGLEY-11806

Vol. 3, No. 2, p. 193

Multiwavelength laser beam is separated into series of parallel color beams using prism and retroreflector. Setup is inexpensive and needs no critical adjustments. It can incorporate several prisms to increase dispersion and reduce overall size. Transmission grating can be used instead of prism with sacrifice in efficiency. Spatial filter can remove unwanted beams.

B78-10175

PULSED NMR SPECTROSCOPY

D. P. BURUM, D. D. ELLEMAN, and W. RHIM

Oct. 1978

NPO-14023

Vol. 3, No. 2, p. 194

Method gives results approximating those of classical continuous-irradiation method but in less time. Method also makes it possible to measure chemical shifts and spin-lattice relaxation times with improved sensitivity. Equipment can be used for adiabatic demagnetization experiments, measurements of rotating-frame spin/lattice relaxation times, and accurate measurements of exact resonance points. When measuring relaxation times, pulse technique can be very effective since pulses may be limited in amplitude and length to prevent spin system from being driven into saturation.

B78-10176

OPTICAL GYROSCOPE

R. M. GOLDSTEIN and W. C. GOSS

Oct. 1978

NPO-14258

Vol. 3, No. 2, p. 195

Instrument uses phase difference between two beams of light to measure rotation. It is considerably simpler and more reliable than conventional spinning-mass gyroscopes used for inertial guidance and is more compact, lighter, and potentially less expensive. Moreover, optical gyroscope requires no warmup period. Although conceived for spacecraft and satellite stabilization, gyroscope should also find applications in flight instruments for private, commercial, and military aircraft.

B78-10177

IMPROVED DOUBLE-PASS MICHELSON INTERFEROMETER

R. A. SCHINDLER

Oct. 1978

NPO-13999

Vol. 3, No. 2, p. 196

Interferometer design separates beams by offsetting center-lines of cat's-eye retroreflectors vertically rather than horizontally. Since beam splitter is insensitive to minimum-thickness condition in this geometry, relatively-low-cost, optically flat plate can be used.

B78-10178

ENERGY CONSERVATION, USING REMOTE THERMAL SCANNING

R. L. BOWMAN and J. R. JACK

Oct. 1978 See also NASA TM-X-73570 (N77-21518)

LEWIS-12812

Vol. 3, No. 2, p. 197

Airborne thermal infrared scans and thermal maps utilized in NASA's energy conservation program have proven to be efficient cost-effective method for identifying heat losses from building roofs and heating system distribution lines. Method employs commercially available equipment in highly developed way.

B78-10179

ELECTROLYSIS CELL STIMULATION

L. H. GORDON, B. R. PHILLIPS, and J. EVANGELISTA (Wyandotte Corp.)

Oct. 1978

LEWIS-12740

Vol. 3, No. 2, p. 198

Computer program represents attempt to understand and model characteristics of electrolysis cells. It allows user to determine how cell efficiency is affected by temperature, pressure, current density, electrolyte concentration, characteristic dimen-

sions, membrane resistance, and electrolyte circulation rate. It also calculates ratio of bubble velocity to electrolyte velocity for anode and cathode chambers.

B78-10180**PROTOTYPE SOLAR-HEATING SYSTEM**

Innovator not given (IBM Corp.) Oct. 1978 See also NASA CR-150534 (N78-17484); B78-10194; B78-10195

M-FS-23916 Vol. 3, No. 2, p. 201

Complete air-collector system to meet needs of single-family dwelling is designed to operate in any region of United States except extreme north and south. Design can be scaled up or down to accommodate wide range of heating and hot-water requirements for single-family, multi-family, or commercial buildings without significantly changing design concept.

B78-10181**RESIDENTIAL SOLAR-HEATING SYSTEM**

Innovator not given (Solafern, Ltd.) Oct. 1978 See also NASA CR-150515 (N78-18526)

M-FS-23909 Vol. 3, No. 2, p. 202

Complete residential solar-heating and hot-water system, when installed in highly-insulated energy-saver home, can supply large percentage of total energy demand for space heating and domestic hot water. System which uses water-heating energy storage can be scaled to meet requirements of building in which it is installed.

B78-10182**MULTICHANNEL TEMPERATURE CONTROL FOR SOLAR HEATING**

J. R. CURRIE

Oct. 1978

M-FS-23775 Vol. 3, No. 2, p. 203

Multiplexer/amplifier circuit monitors temperatures and temperature differences. Although primarily designed for cycle control in solar-heating systems, it can also measure temperatures in motors, ovens, electronic hardware, and other equipment.

B78-10183**PROGRAMMABLE CONTROLLER FOR SOLAR HEATING**

Innovator not given (Rho Sigma, Inc.) Oct. 1978 See also NASA CR-150535 (N78-17485)

M-FS-23915 Vol. 3, No. 2, p. 204

Versatile microprocessor-based unit accepts sensor inputs and generates programmed control signals. Typical of possible applications would be to monitor differential temperature measurements in solar-heating systems, to turn on pumps and backup systems, and off-peak control for backup systems.

B78-10184**UNIVERSAL TEST FIXTURE FOR SOLAR CELLS**

J. M. KOLYER (Rockwell Intern. Corp.)

Oct. 1978 See also B78-10185

NPO-14062 Vol. 3, No. 2, p. 205

Coverings for solar cells are evaluated conveniently with alumina ceramic circuit board holding three pairs of cells and three field-effect translator (FET) chips overlaid with candidate encapsulant. With fixture, solar cells and encapsulants are exposed to Sunlight and weather, either natural or artificial, to provide pertinent measurement and performance data.

B78-10185**ACCELERATED-WEATHERING TEST-SYSTEM FOR SOLAR CELLS**

J. M. KOLYER (Rockwell Intern. Corp.)

Oct. 1978 See also B78-10184

NPO-14061 Vol. 3, No. 2, p. 205

Test system rapidly evaluates effects of sunlight, humidity, and temperature. System accelerates environmental testing since Sunlight is held at equivalent noon exposure (for a selected locality) for 12 hours; alternating light and dark periods are included to check for possible dark reactions in specimens.

B78-10186**AUTOMATED SOLAR-CELL-ARRAY ASSEMBLY MACHINE**

E. N. COSTOGUE, R. L. MUELLER, J. K. PERSON, and R. K. YASUI

Oct. 1978

NPO-13652

Vol. 3, No. 2, p. 206

Continuous-feeding machine automatically bonds solar cells to printed-circuit substrate. In completed machine, cells move to test station where electrical characteristics could be checked. If performance of cell is below specifications, that cell is marked and removed. All machine functions are synchronized by electronics located within unit. It may help to lower costs in future solar-cell production.

B78-10187**IMPROVED CONICAL SOLAR CONCENTRATOR**

J. S. GRIFFITH

Oct. 1978

NPO-13825

Vol. 3, No. 2, p. 207

Varied shapes give uniform concentration without significantly increasing fabrication costs. More complex shapes can be developed to make reflection pattern even more uniform without going over to parabolic surfaces. Various simple curves and S-shapes could be constructed by spinning or hydroforming methods.

B78-10188**INEXPENSIVE, PORTABLE, INTEGRATING SOLAR ENERGY METER**

R. M. MASTERS

Oct. 1978 See also NASA TM-73791 (N78-14630); B75-10283

LEWIS-12804

Vol. 3, No. 2, p. 208

Silicon-cell insolometer automatically measures and totals amount of energy available in sunlight falling on the earth at specific location over selected period of time. Device incorporates single silicon solar cell as sensing element and relies on principle that short-circuit current from solar cell is directly proportional to amount of light that shines on cell.

B78-10189**OPTICS FOR NATURAL LIGHTING**

H. B. EDWARDS

Oct. 1978

LANGLEY-12333

Vol. 3, No. 2, p. 209

Energy-saving optics utilize sky and sun for lighting. Innovative optical arrangements for transmitting outdoor light into building interiors are described using flat white and mirrored surfaces for converging and diverging light pipes.

B78-10190**SELECTION STANDARD FOR FEP FILMS FOR SOLAR ENERGY**

M. W. REED (Vought Corp.)

Oct. 1978

MSC-16999

Vol. 3, No. 2, p. 211

Purple fluorocarbon ethylene propylene (FEP) films are more efficient due to low absorptance. Designers seeking to improve coatings quantify this effect and devise simple screening test based on transmittance of films.

B78-10191**PROTOTYPE RESIDENTIAL SOLAR-ENERGY SYSTEM**

Innovator not given (IBM Corp.) Oct. 1978 See also NASA CR-150558 (N78-19649); B78-10192

M-FS-23932

Vol. 3, No. 2, p. 211

Complete solar-energy domestic-hot-water system for single-family residences is described in brochure. It contains data on procurement, installation, operation, and maintenance of system in residential or light commercial buildings. Appendix includes vendor brochures for major system components. Drawings, tables, and graphs complement text.

B78-10192**PROTOTYPE RESIDENTIAL SOLAR-ENERGY SYSTEM-ENGINEERING ANALYSIS**

Innovator not given (IBM Corp.) Oct. 1978 See also NASA CR-150544 (N78-19604); B78-10191

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M-FS-23929

Vol. 3, No. 2, p. 212

Tests indicate performance very close to theoretical predictions. Major objectives were to verify system installation techniques, operation, and performance; to verify performance of individual subsystems; and to provide general test data base comparison with field data.

B78-10193

RESIDENTIAL SOLAR-HEATING SYSTEM - DESIGN BROCHURE

Innovator not given (Contemporary Systems, Inc.) Oct. 1978 See also NASA CR-150600 (N78-20615)

M-FS-23933

Vol. 3, No. 2, p. 212

Design brochure for commercially-available solar-heating system is valuable to architects, engineers, and designers. It contains information on system configuration, system sizing, and mechanical layout. Drawings and specifications of all components and typical installation details are included in appendix.

B78-10194

PROTOTYPE SOLAR-HEATING SYSTEM-ENGINEERING ANALYSIS

Innovator not given (IBM Corp.) Oct. 1978 See also NASA CR-150522 (N78-18527) B78-10180; B78-10195

M-FS-23910

Vol. 3, No. 2, p. 213

Space and domestic-water solar-heating prototype was tested in three phases: simulated energy function, winter normal operation, summer normal operation. Prototype was judged suitable for field installation.

B78-10195

PROTOTYPE SOLAR-HEATING SYSTEM - INSTALLATION MANUAL

Innovator not given (IBM Corp.) Oct. 1978 See also NASA CR-150524 (N78-18523); B78-10180; B78-10194

M-FS-23907

Vol. 3, No. 2, p. 213

Manual for prototype solar-heating system gives detailed installation procedures for each of seven subsystems. Procedures for operation and maintenance are also included. It discusses architectural considerations, building construction considerations, and checkout-test procedures.

B78-10196

SOLAR-HEATING MODULE

D. L. CHRISTENSEN (Alabama Univ.)

Oct. 1978

M-FS-23925

Vol. 3, No. 2, p. 213

Comprehensive set of engineering drawings and instructions for installation, operation, repair, and maintenance are available for module that provides hot-air or hot-water needs for residence or commercial building. It can accommodate solar collectors of various sizes and types. It can provide utility, workshop, or storage space, in addition to providing hot water or hot air. Extensive insulation minimizes heat losses in structure and in storage and fluid-handling subsystems.

B78-10197

PASSIVE HEAT EXCHANGER FOR SOLAR HEATING

Innovator not given (Sigma Research, Inc.) Oct. 1978 See also NASA CR-150516 (N78-18522); B78-10198

M-FS-23914

Vol. 3, No. 2, p. 214

Requirements for design, manufacture, installation, and performance of passive heat-exchanger module with auxiliary heaters for use with solar-heating systems are described.

B78-10198

PASSIVE HEAT EXCHANGER - INSTALLATION PACKAGE

Innovator not given (Sigma Research, Inc.) Oct. 1978 See also NASA CR-150512 (N78-20602); B78-10197

M-FS-23930

Vol. 3, No. 2, p. 214

Package covers installation, operation, and maintenance of heat exchanger which has auxiliary heaters that provide backup heat in inclement weather. Drawings, including schematics, complement text material, which is organized as step-by-step

instructions. Trouble-shooting section discusses probable causes and repairs for most common difficulties.

B78-10199

PROTOTYPE AIR FLAT-PLATE SOLAR COLLECTOR

Innovator not given (Life Sciences Engineering) Oct. 1978 See also NASA CR-150514 (N78-17479); B78-10200

M-FS-23893

Vol. 3, No. 2, p. 214

Four reports trace development from preliminary design through delivery of hardware. Developmental test, including airflow, air temperature, and efficiency are discussed in reports, as are qualification tests on prototypes and final acceptance tests. Qualification test program includes measurements tests, and structural analysis.

B78-10200

FLAT-PLATE SOLAR COLLECTOR - INSTALLATION PACKAGE

Innovator not given (Life Sciences Engineering) Oct. 1978 See also NASA CR-150536 (N78-19605); B78-10199

M-FS-23921

Vol. 3, No. 2, p. 214

Package includes installation, operation and maintenance manual for collector, analysis of safety hazards, special handling instructions, materials list, installation drawings, and warranty and certification statement. Manual includes instructions for roof preparation and for preparing collector for installation. Several pages are devoted to major and minor repairs.

B78-10201

TESTING OF THREE HOT-AIR SOLAR COLLECTORS

R. LOSEY (Wyle Laboratories)

Oct. 1978 See also NASA CR-150495 (N78-17471)

M-FS-23887

Vol. 3, No. 2, p. 215

Report presents procedures used and results obtained during program to determine pressure drops across three prototype hot-air solar collectors as function of air velocity and operating temperature.

B78-10202

THERMAL PERFORMANCE OF A HOT-AIR SOLAR COLLECTOR

J. CHIOU (Wyle Laboratories)

Oct. 1978 See also NASA CR-150509 (N78-17478)

M-FS-23891

Vol. 3, No. 2, p. 215

Series of tests evaluated thermal performance of hot-air solar collector. Evaluation included time constant, collector-efficiency, collector-stagnation, properties tests.

B78-10203

PERFORMANCE AND STRUCTURAL TESTS OF HOT-AIR SOLAR COLLECTORS

K. SHIH (Wyle Laboratories)

Oct. 1978 See also NASA CR-150506 (N78-18525)

M-FS-23911

Vol. 3, No. 2, p. 215

Report describes program to determine thermal performance and structural characteristics of selected hot-air collectors in both real and simulated environmental conditions.

B78-10204

THERMAL PERFORMANCE OF A HOT-AIR SOLAR COLLECTOR

Innovator not given (Wyle Laboratories) Oct. 1978 See also NASA CR-150572 (N78-19652)

M-FS-23924

Vol. 3, No. 2, p. 216

Report contains procedures and results of thermal-performance tests on double-glazed air solar collector. Four types of tests were carried out including thermal-efficiency and stagnation tests, collector time-constant tests to assess effects of transients, and incident-angle modifier tests. Data are presented in tables and as graphs and are discussed and analyzed.

B78-10205

FLAT-PLATE LIQUID SOLAR COLLECTOR

K. SHIH (Wyle Laboratories)

Oct. 1978 See also NASA CR-150511 (N78-18521)

M-FS-23912

Vol. 3, No. 2, p. 216

Report presents test procedures and results of program to obtain thermal performance data on liquid, incident-angle-modifier, heat-loss-coefficient, and stagnation tests.

B78-10206
PERFORMANCE EVALUATIONS OF A LIQUID SOLAR COLLECTOR

K. SHIH (Wyle Laboratories)
Oct. 1978 See also NASA CR-150573 (N78-19650)
M-FS-23931 Vol. 3, No. 2, p. 216

Report presents procedures and results of thermal performance tests on single-covered liquid solar collector under simulated conditions. Test conditions and data are given in tables and graphs for stagnation tests and thermal performance test. In addition, time-constant test and incident-angle modifier test were conducted to determine transient effect and incident-angle effect. Results of collector load tests are also given.

B78-10207
INDOOR AND OUTDOOR TESTS OF A LIQUID SOLAR COLLECTOR

R. LOSEY (Wyle Laboratories) and K. SHIH (Wyle Laboratories)
Oct. 1978 See also NASA CR-150505 (N78-17472); NASA CR-150507 (N78-17473)
M-FS-23886 Vol. 3, No. 2, p. 217

Two reports describe thermal-performance data obtained on double-covered liquid solar collector. One report describes data obtained during outdoor testing and the other describes indoor test data obtained by using Marshall Space Flight Center solar simulator. Indoor data were taken to verify performance of solar simulator.

B78-10208
THERMAL PERFORMANCE OF A FLAT-PLATE LIQUID SOLAR COLLECTOR

K. SHIH (Wyle Laboratories)
Oct. 1978 See also NASA CR-150508
M-FS-23890 Vol. 3, No. 2, p. 217

Report presents procedures and results of a program to obtain thermal performance data on double-covered liquid solar collectors.

B78-10209
CORROSION INHIBITORS FOR SOLAR HEATING AND COOLING SYSTEMS

J. H. TABONY (Southern Univ.)
Oct. 1978 See also NASA CR-150575 (N78-17475)
M-FS-23892 Vol. 3, No. 2, p. 217

Candidate materials were tested for their ability to limit corrosion under conditions that approximate those found in typical solar-energy system. In addition to presentation of data, report also includes discussion of different forms of corrosion and recommendations for future work.

B78-10210
PERFORMANCE OF BLACK-NICKEL AND BLACK-CHROME SOLAR COLLECTORS

R. LOSEY (Wyle Laboratories)
Oct. 1978 See also NASA CR-150497 (N78-17470)
M-FS-23888 Vol. 3, No. 2, p. 218

Report presents procedures used and results obtained during tests to determine comparative efficiency of black-nickel and black-chrome solar-collecting surfaces.

B78-10211
MEASURING METALLIC CONCENTRATIONS IN GLYCOL SOLUTIONS

Innovator not given (Houston Chemical Co.) Oct. 1978 See also NASA CR-150520 (N78-17174)
M-FS-23894 Vol. 3, No. 2, p. 218

A study of atomic absorption spectroscopy as a possible nonobtrusive corrosion indicator for solar-energy systems is described. Procedures were tested for determining low levels of metallic concentration in aqueous glycol formulations. Other methods for determining corrosion are suggested.

B78-10212
GLASS SOLAR COLLECTOR - MATERIALS ASSESSMENT

R. L. NICHOLS
Oct. 1978 See also NASA TM-78163 (N78-21597)
M-FS-23926 Vol. 3, No. 2, p. 218

Comprehensive series of tests evaluates design, materials, and failure modes of commercially-available glass solar-collector system. Results of materials analysis segment of program are presented to report.

B78-10213
PUMP EFFICIENCY IN SOLAR-ENERGY SYSTEMS

Innovator not given (Tennessee Tech. Univ.) Oct. 1978 See also NASA CR-150604 (N78-20617)
M-FS-23934 Vol. 3, No. 2, p. 219

Study investigates characteristics of typical off-the-shelf pumping systems that might be used in solar systems. Report includes discussion of difficulties in predicting pump efficiency from manufacturers' data. Sample calculations are given. Peak efficiencies, flow-rate control, and noise levels are investigated. Review or theory of pumps types and operating characteristics is presented.

B78-10214
THE ECONOMICS OF SOLAR POWERED ABSORPTION COOLING

J. C. BARTLETT (IBM Corp.)
Oct. 1978 See also NASA CR-150533 (N78-18524)
M-FS-23908 Vol. 3, No. 2, p. 219

Analytic procedure evaluates cost of combining absorption-cycle chiller with solar-energy system in residential or commercial application. Procedure assumes that solar-energy system already exists to heat building and that cooling system must be added. Decision is whether to cool building with conventional vapor-compression-cycle chiller or to use solar-energy system to provide heat input to absorption chiller.

B78-10215
APPLICATION OF SOLAR ENERGY TO AIR-CONDITIONING

A. J. HARSTAD (IBM Corp.) and J. M. NASH (IBM Corp.)
Oct. 1978 See also NASA CR-150532 (N78-17483)
M-FS-23913 Vol. 3, No. 2, p. 220

Results of survey of application of solar energy to air-conditioning systems are summarized in report. Survey reviewed air-conditioning techniques that are most likely to find residential applications and that are compatible with solar-energy systems being developed.

B78-10318
'PSEUDOBACKSCATTER' LASER VELOCIMETER

W. D. GUNTHER
Jan. 1979
ARC-10970 Vol. 3, No. 3, p. 343

Laser instrument measures speed of fluid flow with sensitivity of forward-scatter velocimeter and convenience of back scatter device. Velocimeter uses corner-cube reflector to return scattered laser beam to source. Device measures airflow around aircraft and in wind tunnels or other fluid-flow measurement applications.

B78-10319
SIGNAL-INTERLEAVING DEVICE

J. R. FISCHER
Jan. 1979
GSFC-12111 Vol. 3, No. 3, p. 344

Interleaving devices combine and duplicate optical electronic and other energy-saving signals in signal processing applications necessary for recording heads in interconnecting logic elements in computers and in data transmission systems. Simple cubic interleaver is characterized by high energy transmission and potentiality for low cost fabrication, and is designed to be easily interconnected with other signal processing elements.

B78-10320
COMMON-CAVITY PUMPED LASER

G. A. KOEPF (NASA)
Jan. 1979

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GSFC-12237

Vol. 3, No. 3, p. 345

Two lasers linked by dichroic coupler are packaged in single cavity. Resulting system is more compact, efficient, and durable than conventional two-cavity lasers. Such instruments (portable pumped lasers) are needed for spectroscopy in plasma diagnostics in atmospheric research, and in radar-like devices for seeing through dense fog or smoke.

B78-10321

MEASURING SURFACE DISPLACEMENTS OPTICALLY

R. B. OWEN

Jan. 1979

M-FS-23861

Vol. 3, No. 3, p. 346

Laser system measures changes in position or roughness of surface without physical contact. Using optical correlation technique, displacement of surface is measured by reflection of laser beam and holographic correlation filtering system. System also determines changes in roughness or shape of surface.

B78-10322

COSINE-CORRECTED OPTICAL DIFFUSER

R. S. ESTEY

Jan. 1979

NPO-14288

Vol. 3, No. 3, p. 347

In solar energy utilization studies, correct measurements of flux arriving at other angles to optical axis must be given. Developed device (Cosine diffuser) significantly reduces measurement errors. In combination of radiation transmitter and diffuser co-operating with collimated optical instrument, relative aperture of instrument is filled.

B78-10323

VACUUM-ULTRAVIOLET LASER USES SUPERFLUID HELIUM

J. S. ZMUIDZINAS

Jan. 1979

NPO-13993

Vol. 3, No. 3, p. 348

Vacuum ultra violet laser in wavelength around 0.800 microns is produced by using optical pumping to increase lifetimes of excited metastable molecules in super fluid helium. In method, super fluid helium is pumped electronically to produce excited HE2, and then pumped by circularly polarized 0.9096 - micron radiation to align excited HE2 molecular spins. High power ultraviolet radiation has potential applications in molecular reaction studies, power transmission in space, and biomedical research.

B78-10324

SOLAR-POWERED HOT-WATER SYSTEM

E. R. COLLINS

Jan. 1979

NPO-14270

Vol. 3, No. 3, p. 349

Hot-water system requires no external power except solar energy. System is completely self-controlling. It includes solar-powered pump, solar-thermally and hydrothermally operated valves, and storage tank filled with open-celled foam, to maintain thermal stratification in stored water.

B78-10325

THIN SILICON-SOLAR CELL FABRICATION

J. LINDMAYER (Solarex Corp.)

Jan. 1979

NPO-14047

Vol. 3, No. 3, p. 350

Flexible silicon slices of uniform thicknesses are fabricated by etching in sodium hydroxide solution. Maintaining uniform thickness across slices during process(fabrication) is important for cell strength and resistance to damage in handling. Slices formed by procedure have reproducible surface with fine orange peel texture, and are far superior to slices prepared by other methods.

B78-10326

NATURAL-OXIDE SOLAR-COLLECTOR COATINGS

A. C. KRUPNICK, M. L. ROBERTS, and M. H. SHARPE

Jan. 1979

M-FS-23518

Vol. 3, No. 3, p. 350

Optically selective coatings for solar collectors are produced

by thermally treating stainless steel in furnace after series of cleaning and soaking operations. Coatings have withstood 18-month exposure tests at 100 percent relative humidity and temperatures of 95 F. Room temperature coatings are valuable as they are inexpensive to produce, highly production oriented, and environmentally stable.

B78-10327

MOUNTING PROCEDURE FOR GEOLOGICAL SAMPLES

D. I. JEZEK (Northrop Corp.)

Jan. 1979

MSC-18206

Vol. 3, No. 3, p. 351

Mounting procedure originally developed for lunar samples preserves geological specimens. Sequence of potting and grinding operations produces thin sections through grains that are easy to handle and are well protected for storage. Method results in more representative sections of mixture of grains of different sizes and more effective distribution of grains uniformly over slide.

B78-10328

MODULAR HEAT-PIPE-RADIATOR PANEL

J. ALARIO (Grumman Aerospace Corp.)

Jan. 1979

MSC-16625

Vol. 3, No. 3, p. 352

Heat-Pipe panel assembled by joining series of Heat-Pipe modules is presented. Each module is identical and includes own radiator Fin and Fluid-Header section. Arrangement gives high turn-down ratio permitting ammonia heat pipes to freeze under low conditions.

B78-10329

ESTIMATING REGIONAL HEAT FLUX FROM SCANNING RADIOMETER DATA

T. D. BESS and G. L. SMITH

Jan. 1979

LANGLEY-12158

Vol. 3, No. 3, p. 353

Method using matrix approach to determine best linear estimate of total flux consistent with condition of minimum variance proves useful in meteorological studies. It is useful for researchers studying options in scanner design such as scan pattern, scan rate, and radiometer field-of-view.

B78-10330

ENERGY CONVERSION ALTERNATIVES STUDY

L. T. SHURE

Jan. 1979 See also NASA-TM-73871 (N78-24659)

LEWIS-13096

Vol. 3, No. 3, p. 353

Comparison of coal based energy systems is given. Study identifies and compares various advanced energy conversion systems using coal or coal derived fuels for baseload electric power generation. Energy Conversion Alternatives Study (ECAS) reports provide government, industry, and general public with technically consistent basis for comparison of system's options of interest for fossil-fired electric-utility application.

B78-10331

PROBLEMS ENCOUNTERED IN SOLAR HEATING AND COOLING SYSTEMS

M. CASH

Jan. 1979 See also NASA TM-78172 (N78-25539)

M-FS-23974

Vol. 3, No. 3, p. 354

Report discussing various experiences of workers at Marshall Space Flight Center in developing solar heating and cooling systems is presented. Presents compilation of problems and their resolutions which can assist designers of solar-energy systems and prevent repetition of errors.

B78-10332

PROTOTYPE SOLAR-HEATING SYSTEM DESIGN PACKAGE

Innovator not given (IBM) Jan. 1979 See also NASA-CR-150614 (N78-21589)

M-FS-23945

Vol. 3, No. 3, p. 355

Design package for complete residential solar-heating system is given. Includes documents and drawings describing performance

design, verification standards, and analysis of system with sufficient information to assemble working system.

B78-10333**PROTOTYPE RESIDENTIAL SOLAR-ENERGY SYSTEM-DESIGN PACKAGE**

Innovator not given (IBM) Jan. 1979 See also NASA-CR-15052 (N78-22465); B78-10192

M-FS-23953**Vol. 3, No. 3, p. 355**

Compilation includes documents and drawings for complete solar-heating system. It discussed system installed in residential building at Veterans' Administration Hospital in Togus, Maine. System can be adapted to other buildings without changing design.

B78-10334**PROTOTYPE RESIDENTIAL SOLAR-ENERGY SYSTEM-INSTALLATION PACKAGE**

Innovator not given (IBM) Jan. 1979 See also NASA-CR-150639 (N78-22474)

M-FS-23956**Vol. 3, No. 3, p. 355**

Installation guidelines for architects and engineers discussing solar-heating system built in Togus, Maine are presented. Includes brief, functional description of system and summary of operation. Drawings complement text.

B78-10335**HOT-AIR FLAT-PLATE SOLAR COLLECTOR-DESIGN PACKAGE**

Innovator not given (Life Sciences Engineering) Jan. 1979 See also NASA-CR-150611 (N78-21602)

M-FS-23941**Vol. 3, No. 3, p. 355**

Report contains design data, performance specifications, and drawings for hot-air flat-plate solar-energy collector. Evaluation consists of tests on thermal performance time constance, and incidence angle modifier test. Results are presented in table and graph form and are analyzed in detail.

B78-10336**EVALUATION OF AN AIR SOLAR COLLECTOR**

Innovator not given (Wyle Labs., Inc.) Jan. 1979 See also NASA-CR-150665 (N78-25547)

M-FS-23978**Vol. 3, No. 3, p. 356**

Performance verification under simulated conditions tested by using Marshall Space Flight Center solar simulator is presented. Evaluation included thermal performance tests, time constant tests, and incident angle modifier tests.

B78-10337**INDOOR TESTS OF A HOT-AIR SOLAR COLLECTOR**

Innovator not given (Wyle Labs., Inc.) Jan. 1979 See also NASA-CR-150631 (N78-22466)

M-FS-23954**Vol. 3, No. 3, p. 356**

Data taken relating indoor testing using solar simulator at Marshall Space Center has been compared with data taken during outdoor tests in previous studies. Data includes tests on thermal performance, time constance, and incidence-angle modifier tests in table/graph form.

B78-10338**PERFORMANCE EVALUATION OF AN AIR SOLAR COLLECTOR**

Innovator not given (Wyle Labs., Inc.) Jan. 1979 See also NASA-CR-150666 (N78-24613)

M-FS-23968**Vol. 3, No. 3, p. 356**

Indoor tests on signal-glazed flat-plate collector are described in report. Marhsall Space Flight Center solar simulator is used to make tests. Test included evaluations on thermal performance under various combinations of flow rate, incident flux, inlet temperature, and wind speed. Results are presented in graph/table form.

B78-10339**OUTDOOR TESTS OF A LIQUID SOLAR COLLECTOR**

Innovator not given (Wyle Labs., Inc.) Jan. 1979 See also NASA-CR-150675 (N78-24614)

M-FS-23969**Vol. 3, No. 3, p. 357**

Results of outdoor test program evaluating thermal performance of liquid solar collector are presented in report. Test article used is flatplate collector with antifreeze solution as working fluid.

B78-10340**POWER LOSS FOR HIGH-VOLTAGE SOLAR-CELL ARRAYS**

L. W. PARKER (Lee W. Parker, Inc.)

Jan. 1979

LEWIS-12865**Vol. 3, No. 3, p. 357**

Electric field particle collection and power loss are calculated in program written in FORTRAN IV for use on UNIVAC 1100/40 computer. Program incorporates positive and negative and negative charge flows and balance between positive and negative flows is performed by iteration.

B78-10341**OCEAN-WAVE RAY OR CREST DIAGRAMS IN SHOALING WATERS**

W. D. MORRIS, L. R. POOLE, and S. R. LECROY (Vought Corp.)

Jan. 1979

LANGLEY-12380**Vol. 3 No. 3, p. 357**

Program developed to aid studies of linear ocean-wave refraction features random-access modular storage of bathymetry data to minimize computer resource requirements. Program is study tool used to forecast ocean conditions for ship routing and offshore activities. It also allows very large geographical regions to be studied with fewer computer resources, but does not restrict applicability of model to smaller areas.

B78-10477**SOLAR SIMULATOR TEST FACILITY**

W. R. HUMPHRIES

Mar. 1979 See also NASA-TM-78165 (N78-21605)

M-FS-23972**Vol. 3, No. 4, p. 507**

Discusses facility constructed at Marshall Space Flight Center to evaluate performance of solar energy collectors under simulated outdoor conditions. Facility simulates sunfall properties such as radiation intensity, spectrum, collimation, uniformity, and direction.

B78-10478**VOLTAGE REGULATOR FOR SOLAR PANELS**

T. A. CASAD

Mar. 1979

NPO-13895**Vol. 3, No. 4, p. 508**

Shunt voltage regulators for solar panels uses internal resistance of panel to control its output voltage. Regulator can be scaled up for high-current solar panels by adding more transistors.

B78-10479**MORE EFFICIENT GAAS SOLAR CELLS**

W. TANTRAPORN

Mar. 1979

LANGLEY-12216**Vol. 3, No. 4, p. 509**

Electron-hole pair production in space charge layer converts nearly 100 percent of photogenerated carriers to useful current. Short life problem is eliminated.

B78-10480**INFRARED SCANNERS DETECT THERMAL GRADIENTS IN BUILDING WALLS**

A. G. KANTSIOS

Mar. 1979

LANGLEY-12157**Vol. 3, No. 4, p. 510**

Presents study on ability of infrared scanner used to detect thermal gradients in outside walls of two homes in Virginia Beach, Virginia under joint effort of Langley Research Center, Virginia Energy Office and Virginia Beach Energy Conservation Pilot Project. Details how study can be used to help minimize energy loss.

B78-10481**SOLAR-POWERED HOT-AIR SYSTEM**

Innovator not given (Solar Engineering and Equipment Co.) Mar. 1979

M-FS-23976**Vol. 3, No. 4, p. 511**

03 PHYSICAL SCIENCES

Solar-powered air heater supplies part or all of space heating requirements of residential or commercial buildings and is interfaced with air to water heat exchanger to heat domestic hot water. System has potential application in drying agricultural products such as cotton, lumber, corn, grains, and peanuts.

B78-10482

OCEAN THERMAL PLANT

L. J. OWENS

Mar. 1979

KSC-11034

Vol. 3, No. 4, p. 512

Modular Ocean Thermal-Energy Conversion (OTEC) plant permits vital component research and testing and serves as operational generator for 100 megawatts of electric power. Construction permits evaporators and condensers to be tested in same environment in which they will be used, and could result in design specifications for most efficient plant facilities in future.

B78-10483

WIND/WATER ENERGY CONVERTER

J. PAULKOVICH

Mar. 1979

GSFC-12361

Vol. 3, No. 4, p. 513

Device will convert wind, water, tidal or wave energy into electrical or mechanical energy. Is comprised of windmill-like paddles or blades synchronously geared to orient themselves to wind direction for optimum energy extraction.

B78-10484

THERMOELECTRICALLY-COOLED VARIABLE-TEMPERATURE PROBE

R. M. KELSO and R. G. RICHMOND

Mar. 1979

MSC-18192

Vol. 3, No. 4, p. 514

Variable-temperature probe for electron spectroscopy requires no cryogenic liquids or resistance heating elements. Device consists of heat sink, probe tip, and nickel-plated copper body which resists oxidation and transfers heat efficiently between tip and heat sink.

B78-10485

IMPROVED FOURIER INTERFERENCE SPECTROMETER

R. A. SCHINDLER

Mar. 1979

NPO-14025

Vol. 3, No. 4, p. 515

Proposed system compensates for velocity changes by multiplying detector output by signal proportional to scan velocity. Increases in velocity are compensated by increase signal from velocity circuit and decreases in velocity are offset by smaller signal from circuit thereby making output signal velocity independent.

B78-10486

LOW-POWER TUNER FOR LASERS

S. LEVINSON (United Aircraft Corp.)

Mar. 1979

M-FS-23863

Vol. 3, No. 4, p. 515

Magnetic transducers tunes laser by making small precise adjustments in length of laser resonant cavity. Device is simple and stable structure consisting of electromagnet pulling on spring supported magnetic plate.

B78-10487

DIFFRACTOID X-RAY FOCUSING

S. O. KASTNER

Mar. 1979

GSFC-12357

Vol. 3, No. 4, p. 516

Presents aspheric concave diffraction surface that is able to focus sharply single wavelength of x-ray or ultraviolet radiation which may originate from either nearby or far-distant source.

B78-10488

IMPROVED SERVO FOR A MICHAELSON INTERFEROMETER

R. A. SCHINDLER

Mar. 1979

NPO-14093

Vol. 3, No. 4, p. 517

Simplified constant-velocity servosystem for continuous-scan interferometer replaces earlier more complex system designed for atmospheric sampling experiments.

B78-10489

INSTRUMENT MEASURES MANY OPTICAL PROPERTIES IN VISIBLE AND IR

C. E. BATTEN

Mar. 1979

LANGLEY-12285

Vol. 3, No. 4, p. 518

Electro-optical system measures reflectance, reflectance ratio, transmission, absorption, refractive index, and absorption coefficient in both visible and infrared (IR) spectral regions. System effectively combining capabilities of ellisometer, reflectometer, and spectrophotometer is expected to find application in environmental and material composition testing fields.

B78-10490

HYDROGEN-MASER FREQUENCY STANDARD

V. REINHARDT and P. CERVENKA (Phoenix Corp.)

Mar. 1979

GSFC-12334

Vol. 3, No. 4, p. 519

Wall shift in frequency of proposed variable-shift maser that is caused by collisions between hydrogen atoms and container walls, could easily be determined, thereby allowing building of frequency standard with accuracy of 1 part in 10 to 14th power.

B78-10491

ULTRATHIN FILMS AS PHOTOMECHANICAL TRANSDUCER

R. F. FEDORS and M. N. SARBOLOUKI

Mar. 1979

NPO-14363

Vol. 3, No. 4, p. 520

Stretched ultrathin, metallized polyimide film is used as photochemical transducer for detection and measurement of total exposure to light. Film is potential nonelectrical replacement for solar cells.

B78-10492

SOLAR-HEATING SYSTEM DESIGN DATA BROCHURE

Innovator not given (Federal Systems Division of IBM Corp.) Mar. 1979

M-FS-23977

Vol. 3, No. 4, p. 521

Report details design and performance specifications of complete system for space and hot-water heating that is assembled from commercially available components. System can meet need of single family dwelling having approximately 1,200 sq ft of floor area and can be scaled to requirements of larger or smaller installations.

B78-10493

SOLAR-HEATING SYSTEM PERFORMANCE TESTS

Innovator not given (Federal Systems Division of IBM Corp.) Mar. 1979

M-FS-25021

Vol. 3, No. 4, p. 522

Report contains results of performance tests on complete system for solar space and hot-water heating system that uses commercially available components. Results were used to determine system suitability for field installation and to generate performance data base for comparison with future tests on field installed systems.

B78-10494

SOLAR-HEATING SYSTEM

Innovator not given (Federal Systems Division of IBM Corp.) Mar. 1979

M-FS-25022

Vol. 3, No. 4, p. 522

Report describes solar modular domestic-hot-water and space-heating system intended for use in small single family dwelling where roof-mounted collectors are not feasible. Contents include design, performance, and hardware specifications for assembly, installation, operation, and maintenance of system.

B78-10495**SOLAR HOT-WATER SYSTEM**

Innovator not given (Solar Engineering and Manufacturing Co.) Mar. 1979

M-FS-25043**Vol. 3, No. 4, p. 522**

Design data brochure describes domestic solar water system that uses direct-feed system designed to produce 80 gallons of 140 F hot water per day to meet needs of single family dwelling. Brochure also reviews annual movements of sun relative to earth and explains geographic considerations in collector orientation and sizing.

B78-10496**RESIDENTIAL SOLAR-HEATING SYSTEM-DESIGN PACKAGE**

Innovator not given (Solafern Ltd.) Mar. 1979

M-FS-25071**Vol. 3, No. 4, p. 523**

Design package for modular solar heating system includes performance specifications, design data, installation guidelines, and other information that should be valuable to those interested in system (or similar systems) for projected installation. When installed in insulated 'energy saver' home, system can supply large percentage of total energy needs of building.

B78-10497**DEVELOPMENT AND TESTING OF A HOT-AIR SOLAR COLLECTOR**

J. M. CAUDLE

Mar. 1979

M-FS-23997**Vol. 3, No. 4, p. 523**

Summarized report on development and testing of hot-air flat-plate solar collector includes structural details, coating selection, and spacing between coating and glass plate. Report gives complete performance specifications and extensive certifications test report.

B78-10498**DESIGN AND INSTALLATION OF A FLAT-PLATE SOLAR COLLECTOR**

Innovator not given (Calmac Manufacturing Co.) Mar. 1979 See also M-FS-25082 (B78-10498)

M-FS-25010**Vol. 3, No. 4, p. 523**

Report presents performance, installation, operation, and maintenance information for flat-plate liquid solar energy collector. Methods for determining optimum collector sizing are described as well.

B78-10499**LIQUID SOLAR COLLECTOR-PERFORMANCE TESTS**

Innovator not given (Calmac Manufacturing Co.) Mar. 1979 See also M-FS-25010 (B78-10498)

M-FS-25082**Vol. 3, No. 4, p. 524**

Report describes comprehensive performances test on commercially-available modular nonmetallic single-glazed liquid solar collector to verify compliance with U. S. Housing and Urban Development Department standards for thermal stability. Program includes tests of initial thermal performance, 30 day stagnation, and final external performance.

B78-10500**CONCENTRATING SOLAR COLLECTOR-INSTALLATION PACKAGE**

Innovator not given (Northrup Corp.) Mar. 1979

M-FS-25068**Vol. 3, No. 4, p. 524**

Report contains general description of concentrating solar collector and tracking system kit, along with comprehensive drawings, instructions, and guidelines to assist in field assembly, installation, operation, and maintenance of system.

B78-10501**CORROSION INHIBITORS FOR SOLAR-HEATING AND COOLING**

T. S. HUMPHRIES

Mar. 1979

M-FS-25023**Vol. 3, No. 4, p. 525**

Report describes results of tests conducted to evaluate abilities

of 12 candidate corrosion inhibitors to protect aluminum, steel, copper, or stainless steel at typical conditions encountered in solar heating and cooling systems. Inhibitors are based on sodium salts including nitrates, borates, silicates, and phosphates.

B78-10502**CHEMICAL-VAPOR DEPOSITION OF SILICON FROM SILANE**

G. C. HSU, R. LUTWACK, and A. K. PRATUR

Mar. 1979 See also NASA-CR-155044 (N77-32265)

NPO-14403**Vol. 3, No. 4, p. 525**

Report lists tables of standard free-energy change, equilibrium constant, and heat of reaction for chemical vapor deposition (CVD) of silicon from silane over temperature range of 100 to 1000 K. Data indicates silicon CVD may be a commercially economical process for production of silicon for solar arrays and other applications.

B78-10503**MULTIDIMENSIONAL HISTOGRAMS**

R. R. JAYROE, JR.

Mar. 1979

M-FS-23855**Vol. 3, No. 4, p. 526**

Program computes four dimensional histogram of Landsat multispectral image data. System enhances image handling and significantly reduces reprocessing costs.

04 MATERIALS

B78-10038**MICROBIAL DESULFURIZATION OF COAL**

M. N. DASTOOR and J. J. KALVINSKAS

Jun. 1978

NPO-14227**Vol. 3, No. 1, p. 47**

Experiments indicate that several sulfur-oxidizing bacteria strains have been very efficient in desulfurizing coal. Process occurs at room temperature and does not require large capital investments of high energy inputs. Process may expand use of abundant reserves of high-sulfur bituminous coal, which is currently restricted due to environmental pollution. On practical scale, process may be integrated with modern coal-slurry transportation lines.

B78-10039**HYDROGEN ENRICHMENT OF SYNTHETIC FUEL**

C. G. JAY (Inst. of Gas Tech.)

Jun. 1978

M-FS-23279**Vol. 3, No. 1, p. 47**

Synthetic gas may be produced at lower cost and higher efficiency by using outside source of hydrogen. Method is compatible with same temperatures and pressures as shift reaction. Process increases efficiency by using less coal and water to provide equal amount of synthetic gas.

B78-10040**POLYIMIDE ADHESIVES FOR TITANIUM AND COMPOSITE BONDING**

A. K. ST. CLAIR and T. L. ST. CLAIR

Jun. 1978

LANGLEY-12257**Vol. 3, No. 1, p. 48**

Approach results in synthesis of addition polyimide adhesives with exceptional high temperature capabilities that show excellent potential for bonding titanium metal, polyimide/graphite composites, and combinations of these materials. Adhesives compatible with materials used in high performance aircraft and spacecraft structures also prove highly desirable in many other applications involving similar adherents.

B78-10041**FLAME-RETARDANT ADHESIVE TAPE**

04 MATERIALS

Innovator not given (Arthur D. Little, Inc.) Jun. 1978 See also NASA CR-151224 (N77-19251)

MSC-16721 Vol. 3, No. 1, p. 49
Nonflammable tape adheres well, can be written on, and has other properties making it extra-safe general-purpose tape.

B78-10042
NEW ADHESIVE WITHSTANDS TEMPERATURE EXTREMES
J. J. PARK and B. SEIDENBERG
Jun. 1978

GSFC-12345 Vol. 3, No. 1, p. 50
Adhesive, developed for high-temperature components aboard satellites, is useful at both high and low temperatures and exhibits low-vacuum volatility and low shrinkage. System uses polyfunctional epoxy with high aromatic content, low equivalent weight, and more compact polymer than conventional bisphenol A tape.

B78-10043
BORON TRIFLUORIDE COATINGS FOR PLASTICS
R. M. KUBACKI (Bell & Howell Co.)
Jun. 1978

ARC-11057 Vol. 3, No. 1, p. 51
Tough, durable coatings of boron trifluoride can be deposited on plastic optical components to protect them from destructive effects of abrasion, scratching, and environment. Coating material can be applied simultaneously with organic polymers, using plasma glow-discharge methods, or it can be used as base material for other coatings to increase adhesion.

B78-10044
ELECTRICALLY-CONDUCTING THERMAL-CONTROL COATING
M. C. SHAI
Jun. 1978

GSFC-12207 Vol. 3, No. 1, p. 52
Coating comprised mainly of zinc and aluminum oxides is characterized by high thermal emittance, low thermal absorption, and high electrical conductivity. Originally developed to protect spacecraft, coating can be used to prevent charge buildup on components in other applications. Mixture is stable under ultraviolet and X-ray radiation and under bombardment by ionizing particles. It can be applied to aluminum, stainless steel, epoxy/fiberglass, and other substrates. When exposed to equivalent of 1,000 Sun-hours illumination, coating remained stable and retained its optical properties.

B78-10045
WROUGHT NICKEL-BASE SUPERALLOY
R. V. MINER, F. H. HARF, and W. B. KENT (Universal Cyclops Corp.)
Jun. 1978 See also B74-10002; B74-10003; NASA-CR-135131 (N77-20208)

LEWIS-12844 Vol. 3, No. 1, p. 52
Superalloy for advanced temperature use is suited to cost-saving powder-metallurgy manufacturing methods and has improved phase stability during longtime heating. Wide variety of applications exists where stainless steels are used for oxidation and/or corrosion resistance.

B78-10046
LOW-CHROMIUM STAINLESS STEELS
C. A. BARRETT, C. A. GYORGAK, and J. R. STEPHENS
Jun. 1978 See also NASA-TN-D-8459 (N77-23241)

LEWIS-12543 Vol. 3, No. 1, p. 53
Two modified stainless-steel formulations, with only two-thirds chromium content found in conventional type 304, have mechanical and chemical properties comparable to type 304. Low-chromium stainless steels have potential uses in heat exchangers, transfer lines for chemicals, automobile trim, and other applications.

B78-10047
MODIFIED CHEMILUMINESCENT NO ANALYZER ACCURATELY MEASURES NOX
R. L. SUMMERS
Jun. 1978 See also NASA-TM-X-73480 (N76-30319)

LEWIS-12850 Vol. 3, No. 1, p. 54
Installation of molybdenum nitric oxide (NO)-to-higher oxides of nitrogen (NOx) converter in chemiluminescent gas analyzer and use of air purge allow accurate measurements of NOx in exhaust gases containing as much as thirty percent carbon monoxide (CO). Measurements using conventional analyzer are highly inaccurate for NOx if as little as five percent CO is present. In modified analyzer, molybdenum has high tolerance to CO, and air purge substantially quenches NOx destruction. In test, modified chemiluminescent analyzer accurately measured NO and NOx concentrations for over 4 months with no denegation in performance.

B78-10048
MEASUREMENT OF TOTAL ORGANIC CONCENTRATION IN WATER
E. WINKLER
Jun. 1978

MSC-16497 Vol. 3, No. 1, p. 55
Instrument for determining total organic concentration in water uses no corrosive reagents or gases. Instead continuous ultraviolet photolysis process converts organic compounds to carbon dioxide (CO2). CO2 electrode is used to measure CO2 content. Only reagent necessary is oxygen, generated in situ by electrolyzing some water. In addition to application in aerospace industry, system has potential uses in pollution monitoring and in laboratory analyses.

B78-10049
SOLAR PHOTOLYSIS OF WATER
P. R. RYASON
Jun. 1978

NPO-14126 Vol. 3, No. 1, p. 56
Photolysis and regeneration reactions could be used in cycle process to generate hydrogen gas from water using sunlight.

B78-10050
LOW-COST HIGH PURITY PRODUCTION
V. K. KAPUR (Stanford Res. Inst.)
Jun. 1978

NPO-14198 Vol. 3, No. 1, p. 57
Economical process produces high-purity silicon crystals suitable for use in solar cells. Reaction is strongly exothermic and can be initiated at relatively low temperature, making it potentially suitable for development into low-cost commercial process. Important advantages include exothermic character and comparatively low process temperatures. These could lead to significant savings in equipment and energy costs.

B78-10051
ULTRA-HIGH-STRENGTH BORON FIBERS
D. R. BEHRENDT, J. A. DICARLO, H. H. GRIMES, and R. J. SMITH

Jun. 1978 See also NASA TN-D-8219 (N76-22313); NASA TM-X-73402 (N76-21293); NASA TM-X-73627 (N77-23207)

LEWIS-12739 Vol. 3, No. 1, p. 57
Boron-on-tungsten fibers with tensile strength and strain-to-failure values increased by fifty percent over commercial grades are produced by controlled chemical-etching process. Improved fibers have potential applications as lightweight composites in ground vehicles, spacecraft, and rotors for energy storage.

B78-10052
PARTIAL INTERLAMINAR SEPARATION FOR COMPOSITES
W. ELBER
Jun. 1978

LANGLEY-12065 Vol. 3, No. 1, p. 58
Epoxy-matrix composites with improved fracture toughnesses, tensile strengths, and impact resistances are fabricated by using perforated film to break part of bond between laminae. Separation diffuses local stress concentrations near cracks, inhibiting their ability to propagate. Tests on modified panels showed fifty percent increase in fracture strengths.

B78-10053**FIRE-RETARDANT FOAMS**

J. GAGLIANI (Intern. Harvester Co.)

Jun. 1978 See also NASA CR-147496 (N76-18278)

MSC-16222 Vol. 3, No. 1, p. 59

Family of polyimide resins are being developed as foams with exceptional fire-retardant properties. Foams are potentially useful for seat cushions in aircraft and ground vehicles and for applications such as home furnishings and building-construction materials. Basic formulations can be modified with reinforcing fibers or fillers to produce cellular materials for variety of applications. By selecting reactants, polymer structure can be modified to give foams with properties ranging from high resiliency and flexibility to brittleness and rigidity.

B78-10054**ABRASION-RESISTANT ANTIREFLECTIVE COATING FOR POLYCARBONATE**

T. J. WYDEVEN

Jun. 1978

ARC-11047 Vol. 3, No. 1, p. 60

Following plasma-polymerization technique, treatment in oxygen glow discharge further enhances abrasion resistance and transmission. Improvement in abrasion resistance was shown by measuring percentage of haze resulting from abrasion. Coating samples were analyzed for abrasion using standard fresh rubber eraser. Other tests included spectra measurements and elemental analysis with spectrometers and spectrophotometers.

B78-10055**ELECTROPLATING AND STRIPPING COPPER ON MOLYBDENUM AND NIOBIUM**

J. L. POWER

Jun. 1978

LEWIS-12151 Vol. 3, No. 1, p. 60

Molybdenum and niobium are often electroplated and subsequently stripped of copper. Since general standard plating techniques produce poor quality coatings, general procedures have been optimized and specified to give good results.

B78-10056**CUSTOM BLENDING OF LAMP PHOSPHORS**

R. E. KLEMM (Singer Co.)

Jun. 1978

MSC-16692 Vol. 3, No. 1, p. 62

Spectral output of fluorescent lamps can be precisely adjusted by using computer-assisted analysis for custom blending lamp phosphors. With technique, spectrum of main bank of lamps is measured and stored in computer memory along with emission characteristics of commonly available phosphors. Computer then calculates ratio of green and blue intensities for each phosphor according to manufacturer's specifications and plots them as coordinates on graph. Same ratios are calculated for measured spectrum. Once proper mix is determined, it is applied as coating to fluorescent tubing.

B78-10057**CURE-RATE DATA FOR SILICONE ADHESIVE**

C. CLATTERBUCK and A. FISHER

Jun. 1978

GSFC-12330 Vol. 3, No. 1, p. 62

Report describes work with concentrations down to 0.07 percent and is useful when applying adhesives in terrestrial and space applications. Cured Silicone retains low-outgassing properties as well as its snap, elongation, and resilience. Tests for hardness of silicone material also showed good results. No gross hysteresis observable on recovery from stretching nor was there any decrease in hardness.

B78-10058**FIRE-AND SMOKE-RETARDANT POLYESTERS AND ELASTOMERS**

S. Y. CHUNG, J. D. INGHAM, D. D. LAWSON, and M. MOSESAN

Jun. 1978

NPO-14053 Vol. 3, No. 1, p. 63

Test results indicate that most effective fire-and smoke-retardant fillers are inorganic hydrates and carbonates that release water and/or carbon dioxide. Most effective filler tested was hydrated sodium silicate. Effectiveness is due to high water content and formation of viscous molten glass when heated. Glass tends to inhibit polymer combustion and to promote formation of char residue.

B78-10059**MOSSBAUER STUDIES OF BULK AND THIN-FILM FETE**

K. AGGARWAL, W. T. ESCUE, and R. G. MENDIRATTA

Jun. 1978 See also NASA TM-X-73380 (N77-23965)

M-FS-23773 Vol. 3, No. 1, p. 63

In study, dependence of Mossbauer parameters on film thickness and film substrate was measured and related to iron tellurium structure. Report also describes film deposition technique (flash deposition) and Mossbauer apparatus.

B78-10060**FAST-DRYING COATING**

E. J. BARTOSZEK (Pennwalt Corp.)

Jun. 1978

MSC-16056 Vol. 3, No. 1, p. 64

Nontoxic coating has excellent optical properties and can be pigmented in many different colors. It bonds well, can be applied by conventional methods, weathers well, and is self-extinguishing. Coating composition comprises latex blends of fluorocarbons, acrylic resins, stabilizers, modifiers, variety of inorganic pigments, and other additives. Suitable latex primers have also been developed from acrylic latex base.

B78-10216**HIGH-YIELD PROCESS FOR PREPARING CALCIUM SUPEROXIDE**

T. J. WYDEVEN

Oct. 1978

ARC-11053 Vol. 3, No. 2, p. 223

Pressure and temperature are controlled precisely and water is rapidly removed to inhibit back reaction in process.

B78-10217**INTERACTIVE DATA-PROCESSING SYSTEM FOR METALLURGY**

T. J. RATHZ

Oct. 1978 See also NASA-TM-X-73379 (N77-23279)

M-FS-23774 Vol. 3, No. 2, p. 224

Equipment indicates that system can rapidly and accurately process metallurgical and materials-processing data for wide range of applications. Advantages include increase in contact between areas on image, ability to analyze images via operator-written programs, and space available for storing images.

B78-10218**FIRE-RETARDANT EPOXY POLYMERS**

R. I. AKAWIE (Hughes Aircraft Co.), N. BLOW (Hughes Aircraft Co.), and T. W. GIANTS (Hughes Aircraft Co.)

Oct. 1978

ARC-11182 Vol. 3, No. 2, p. 225

Phosphorus atoms in molecular structure of epoxies make them fire-retardant without degrading their adhesive strength. Moreover, polymers are transparent, unlike compounds that contain arsenic or other inorganics. They have been used to bond polyvinylfluoride and polyether sulfone films onto polyimide glass laminates.

B78-10219**COMPATIBILITY OF AU-CU-NI BRAZE ALLOY WITH NH₃**

V. DIAZ, JR. (Rockwell Intern. Corp.)

Oct. 1978

MSC-16864 Vol. 3, No. 2, p. 226

Tests show that Gold-Copper-Nickel alloy is compatible with ammonia systems. Joining tubes by brazing has advantages such as reducing chances of excessive grain growth in base metal, saving weight, and cleanliness.

04 MATERIALS

B78-10220

ANTISTATIC ADDITIVE FOR POLYIMIDE FILMS

M. N. SARBOLOUKI

Oct. 1978

NPO-14232

Vol. 3, No. 2, p. 227

Thin polyimide films are given excellent antistatic properties even at high temperature by low-level loading with lithium salts. Extremely hygroscopic, these salts absorb a layer of atmospheric water that provides conductive paths allowing charges to dissipate.

B78-10221

BRAZED BORON-SILICON CARBIDE/ALUMINUM STRUCTURAL PANELS

W. E. ARNOLD, JR., T. T. BALES, T. G. BROOKS, A. G. LAWSON, P. D. MITCHELL, D. M. ROYSTER, and R. WIANT (Vought Corp.)
Oct. 1978 See also NASA TM-X-3432 (N77-18220)

LANGLEY-12244

Vol. 3, No. 2, p. 228

Fluxless brazing process minimizes degradation of mechanical properties composite material of silicon carbide coated boron fibers in an aluminum matrix. Process is being used to fabricate full-scale Boron-Silicon Carbide/Aluminum-Titanium honeycomb core panels for flight testing and ground testing.

B78-10222

PULSE-ECHO PROBE OF ROCK PERMEABILITY NEAR OIL WELLS

K. Y. NARASIMHAN and S. P. PARTHASARATHY

Oct. 1978

NPO-14192

Vol. 3, No. 2, p. 229

Processing method involves sequential insonifications of borehole wall at number of different frequencies. Return signals are normalized in amplitude, and root-mean-square (rms) value of each signal is determined. Values can be processed to yield information on size and number density of microfractures at various depths in rock matrix by using averaging methods developed for pulse-echo technique.

B78-10223

PRESSURE-SENSITIVE GLASS REACTION CELL

R. T. ANSELM I (Martin Marietta Corp.)

Oct. 1978

LANGLEY-11256

Vol. 3, No. 2, p. 230

Special all glass reaction cell is used to determine catalytic effect of various materials on hydrazine decomposition.

B78-10224

IMPROVED ALKALI-METAL/SILICATE BINDERS

J. SCHUTT

Oct. 1978

GSFC-12303

Vol. 3, No. 2, p. 231

Family of inorganic binders utilizes potassium or sodium oxide/silicate dispersion and employs high mole ratio of silicon dioxide to alkali-metal binder. Binders are stable, inexpensive, extremely water resistant, and easy to apply.

B78-10225

IMPROVED EPOXY ADHESIVE WITH RADIOGRAPHIC TRACER

R. G. CAMPBELL (McDonnell Douglas Corp.)

Oct. 1978

MSC-18020

Vol. 3, No. 2, p. 231

Addition of tungsten powder (4 percent by weight) to commercially available low viscosity epoxy adhesive, yields nonmetal composite repair material with enhanced radiographic contrast for radiographic and ultrasonic inspection techniques.

B78-10226

REPAIRING SILICON CARBIDE COATINGS

D. M. SHUFORD (Vought Corp.)

Oct. 1978

MSC-18033

Vol. 3, No. 2, p. 232

Simple technique uses commercial binder, containing commercially available blended powder mixture for repairing silicon carbide coatings.

B78-10227

CORROSION DETECTION AND EVALUATION

C. C. KAMMERER (Rockwell Intern. Corp.), F. H. STUCKENBERG (Rockwell Intern. Corp.), and F. E. SUGG (Rockwell Intern. Corp.)
Oct. 1978

M-FS-24436

Vol. 3, No. 2, p. 232

Report details comprehensive study of nondestructive methods for detecting and/or evaluating up to six different types of corrosion: general, galvanic filiform, pitting, intergranular, and stress. Studied methods include: visual/optical inspection, radiography, penetrant inspection, analysis by polarized light, electrical conductivity measurements, pH analysis, and ultrasonic inspection.

B78-10228

RESPONSE OF GRAPHITE/EPOXY COMPOSITES TO MOISTURE

H. POWELL (Rockwell Intern. Corp.) and D. J. ZIGRANG (Rockwell Intern. Corp.)

Oct. 1978

MSC-16899

Vol. 3, No. 2, p. 233

Report presents comparative absorption and desorption data obtained from response of graphite epoxy composites to moisture experiments with Fiberite 934, Narmco 5208, and Hexcel F-263 epoxy resin systems in cross-piled collimated laminates containing Thornel-300 graphite fibers.

B78-10229

MECHANICAL PROPERTIES OF 18-2 MN STAINLESS STEEL

J. W. MONTANO

Oct. 1978 See also NASA TM-X-73375 (N77-21214)

M-FS-23843

Vol. 3, No. 2, p. 233

Report details experimental data from behavioral studies of mechanical properties of 18-2 Mn (Nitronic 32) stainless steel obtained under cryogenic temperatures and stress-corrosion conditions.

B78-10230

NITRONIC 60: A NEW ALLOY

J. W. MONTANO

Oct. 1978 See also NASA-TM-X-73359 (N77-16149); B78-10229; B78-10396

M-FS-23844

Vol. 3, No. 2, p. 233

Report presents test demonstrations of mechanical and stress-corrosion properties at very low temperatures. Included are design details of alloy specimens and test procedures.

B78-10231

HYDROGEN EMBRITTLEMENT OF NICKEL

M. H. KAMDAR

Oct. 1978

ARC-10966

Vol. 3, No. 2, p. 234

Report describes comprehensive study of hydrogen embrittlement in high purity single-crystal and polycrystalline nickel at temperatures from -130 degrees C to 20 degrees C.

B78-10342

COAL DESULFURIZATION WITH IRON PENTACARBONYL

G. C. HSU

Jan. 1979

NPO-14272

Vol. 3, No. 3, p. 361

Coal desulfurization with iron pentacarbonyl treatment under mild conditions removes up to eighty percent of organic sulfur. Preliminary tests on treatment process suggest it may be economical enough to encourage investigation of use for coal desulfurization. With mild operating conditions, process produces environmentally-acceptable clean coal at reasonable cost.

B78-10343

COAL LIQUEFACTION TO INCREASE JET FUEL PRODUCTION

Innovator not given (Institute of Gas Technology) Jan. 1979 See also NASA-CR-145028 (N78-75465)

LANGLEY-12038

Vol. 3, No. 3, p. 362

Processing concept that increases supply of jet fuel has been developed as part of study on methods for converting coal to

hydrogen, methane, and jet fuel. Concept takes advantage of high aromatic content of coal-derived liquids to make high-octane gasoline, instead of destroying aromatics to make jet fuel.

B78-10344**IMPROVED NUCLEONIC COAL-THICKNESS MONITOR**

C. E. CROUCH, S. D. ROSE, and E. W. JONES (Mississippi State Univ.)

Jan. 1979 See also NASA-CR-150465 (N78-11454)

M-FS-23725 Vol. 3, No. 3, p. 363

Design for coal-thickness-sensing instrument features independent hydropneumatic suspension of radiation source and detector. Monitor uses source and detector which are independently mounted, to follow contour of coal surface more closely and to eliminate errors caused by variations in airgap along radiation path. Device may help to bring fully-automated coal mining closer to reality.

B78-10345**COAL MINING WITH A LIQUID SOLVENT**

D. D. LAWSON and C. G. MILLER

Jan. 1979

NPO-14028 Vol. 3, No. 3, p. 364

Study suggests carbonated water can dissolve or suspend coal and carry it to surface. Mixture of carbon dioxide and water may be coal solvent that will make unmanned mining reality. When used with proposed process monitoring coal solubility with conventional strain gage, solvent is basis for rapid cost effective extraction of coal from underground seams.

B78-10346**LOW-TEMPERATURE ELASTOMER PRODUCTION AND CURING**

J. D. INGHAM and R. A. RHEIN

Jan. 1979

NPO-13899 Vol. 3, No. 3, p. 364

Thermally and chemically stable polymers are needed for materials applications, particularly highly-stable elastomers for solid propellant binders where initial high temperature required for dissolving anhydride in polymer is detrimental. Solvent reactant system allows polymerization without condensation of products under low heat. Solvents utilized were dimethylacetamide, dimethylformamide, etc.

B78-10347**GAS-PATH SEAL MATERIAL**

R. L. JOHNSON, L. P. LUDWIG, and R. C. BILL (U. S. Army Res. & Tech. Labs.)

Jan. 1979 See also NASA-TP-1128 (N78-15229); NASA-TM-X-73650 (N77-23489)

LEWIS-12623 Vol. 3, No. 3, p. 365

Composite sealant reduces frictional heating, wear, and leakage. Sealant is needed to reduce wear of rotating compressor-blade tips if they rub against stationary engine casing. Nickel substrate with plasmasprayed aluminum top layer was evaluated. Results showed little wear on top layer took place; layer itself remained intact and provided heat conduction pathway from rub surface.

B78-10348**PRECISION CLEAVER FOR 'SOFT' CRYSTALS**

J. S. J. BENEDICTO, F. HALLBERG, and B. E. WOODGATE

Jan. 1979

GSFC-12291 Vol. 3, No. 3, p. 366

'Soft' crystals are cleaved as thin 0.005 inch with special cleaver. Thin slices of soft crystalline materials are used in X-ray spectrometers. Slices are usually cut by hand with wire or blade. Wire tends to scratch surface and to produce slices of nonuniform thickness. Device will rapidly cut soft crystals in smooth, thin, uniform slices.

B78-10349**EMBRITTLMENT PROOF NICKEL-ALLOY BELLOWS**

C. M. DANIELS, JR. (Rockwell Intern. Corp.)

Jan. 1979

M-FS-19331 Vol. 3, No. 3, p. 367

Thin cover of corrosion-resistant steel (CRES) protects metal bellows and ducts against hydrogen embrittlement. Bellows carries hydrogen at high pressure and currently is used in the engine of Space Shuttle.

B78-10350**CORONA-DISCHARGE AIR-PURIFICATION SYSTEM**

T. J. WYDEVEN (Stanford Univ.) and D. L. FLAMM

Jan. 1979

ARC-10975 Vol. 3, No. 3, p. 368

Plasma reaction chamber removes trace contaminants from spacecraft, submarines, and other closed environments by oxidizing contaminants to produce carbon dioxide and water. Contaminants are alcohols, esters, hydrogen sulfide, and ammonia. Others are lubricant solvents such as Freons, aromatics, and Ketones. Contaminants are removed from chamber by scrubber.

B78-10351**ZONE-REFINING ENCAPSULATED SEMICONDUCTORS**

M. C. DAVIDSON and L. R. HOLLAND

Jan. 1979

M-FS-23902 Vol. 3, No. 3, p. 369

Reflector directs intense, sharply focused heat precisely where it is needed for zone-refining semiconductor materials. Reflector is especially suited for compound semiconductors which must be sealed inside capsule to prevent vaporizing during zone refining. Device is flattened toroid with elliptical-cross-section, much like horizontal partly-inflated inner tube.

B78-10352**PREDICTING STRUCTURES OF CROSS-LINKED CONDENSATION POLYMERS**

H. E. MARSH

Jan. 1979

NPO-14007 Vol. 3, No. 3, p. 370

Mathematical procedure is used to predict structure of cross-linked condensation polymer differentiated from an additional polymer resulting from specific reaction. Procedure will greatly reduce amount of empirical formulation and testing needed to produce desired product.

B78-10353**ECONOMICAL SYNTHESIS OF POTASSIUM SUPEROXIDE**

A. T. BELL (California Univ., Berkeley) and P. SADHUKHAN (California Univ., Berkeley)

Jan. 1979

ARC-10992 Vol. 3, No. 3, p. 372

High-frequency discharge in oxygen can be used to prepare superoxides of alkali and alkaline-earth metals. Since no direct-current discharge at the electrodes is present, no sputtering can contaminate the product, hence a high conversion efficiency.

B78-10354**FIRE-RETARDANT COVERING FOR SMALL CONTAINERS**

S. R. RICCIETELLO and P. M. SAWKO

Jan. 1979

ARC-11104 Vol. 3, No. 3, p. 372

Flexible intumescent sheets of exceptionally uniform thickness may be used to protect containers and other small objects less than 25.4 cm in diameter from fire hazards.

B78-10355**FIRE-RETARDANT LIGHTWEIGHT COMPOSITE**

W. J. GILWRE, JR.

Jan. 1979

ARC-10918 Vol. 3, No. 3, p. 373

Low-density honeycomb-core composite minimizes fire-safety related hazards such as fire resistance and noxious gas generation.

B78-10356**HEAT RESISTANT NONTOXIC LAMINATE**

D. A. KOURTIDES and J. A. PARKER

Jan. 1979

ARC-11040 Vol. 3, No. 3, p. 374

Light-weight low-cost laminate used to replace epoxy compound panels is suitable for auto, railcar, and aircraft structural

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parts. Physical and thermal tests show panels made from formulation have better insulative properties, and burn cleaner with less toxic gas generation than panels made with conventional materials.

B78-10357

ION-BEAM TEXTURING OF MATERIALS

W. R. HUDSON

Jan. 1979 See also NASA-TM-X-73470 (N76-30957)

LEWIS-12996 Vol. 3, No. 3, p. 374

Xenon ion-beam source is used to create microscopically-rough surface texture by sputter-etching surface while simultaneously sputter depositing lower yield material onto surface.

B78-10358

CHEMICAL AGENT BOOSTS NATURAL-RUBBER OUTPUT

A. J. BAUMAN

Jan. 1979

NPO-14185 Vol. 3, No. 3, p. 376

Topical treatment of guayule plant with triethylamine compounds may boost rubber yield 400 to 500 percent.

B78-10359

TOXIC SUBSTANCES HANDBOOK

T. L. JUNOD

Jan. 1979 See also NASA-TM-73866 (N78-20755)

LEWIS-13124 Vol. 3, No. 3, p. 376

Handbook, published in conjunction with Toxic Substances Alert Program at NASA Lewis Research Center, profiles 187 toxic chemicals in their relatively pure states and include 27 known or suspected carcinogens.

B78-10360

EFFECTS OF MOISTURE ON GRAPHITE/EPOXY COMPOSITES

C. W. DILL (Rockwell Intern. Corp.)

Jan. 1979

MSC-18045 Vol. 3, No. 3, p. 377

Report describes tests made on commercially available graphite/epoxy composites to analyze effects of water absorption and temperature spiking on composite strength and stiffness.

B78-10361

OXYGEN AND NITROGEN RAMAN SPECTRA

G. C. FRALICK

Jan. 1979

LEWIS-12849 Vol. 3, No. 3, p. 377

Engineering design computer program that calculates rotational Raman spectrum of either nitrogen or oxygen can be used to increase performance of gas-turbine engines by predicting extent of pressure broadening associated with temperature measurements at elevated pressure.

B78-10504

ULTRAFINE PBI FIBERS AND YARNS

J. R. LEAL (Celanese Research Corp.) and M. TAN (Celanese Research Corp.)

Mar. 1979 See also NASA-CR-152057 (N78-16189)

ARC-11221 Vol. 3, No. 4, p. 529

Gentle precisely controlled process is used to draw polybenzimidazole (PBI) fibers to denier as low as 0.17 per fiber. Yarns of lightweight fibers could be useful in applications where lightweight textiles must withstand high temperatures, corrosion, or radiation.

B78-10505

MEASUREMENT OF SUBCOAT THICKNESS BY CHARACTERISTIC X-RAYS

W. J. HARRIS (Lockheed Missiles and Space Co.) and R. A. QUINN (Lockheed Missiles and Space Co.)

Mar. 1979

MSC-16718 Vol. 3, No. 4, p. 530

Technique employs x-ray scanning system to measure thickness of topcoat and subcoat of heat shields and other ceramic materials. System scans sample in raster pattern and depicts image of structure on cathode-ray-tube for viewing or photocopying within seconds.

B78-10506

ION-BEAM-TEXTURED GRAPHITE

A. N. CURREN, R. FORMAN, J. S. SOVEY, and W. R. HUDSON
Mar. 1979 See also NASA-TP-1097 (N78-11230)

LEWIS-12724 Vol. 3, No. 4, p. 530

Results of evaluation of seven different materials (copper, tantalum, titanium carbide, soot, smooth pyrolytic graphite, and ion-beam-textured graphite) for low secondary-electron emitting surface for depressed collectors in microwave amplifiers indicate that ion-beam-textured graphite shows greatest potential for use.

B78-10507

ABSORPTIVE COATING FOR ALUMINUM SOLAR PANELS

D. DESMET (Univ. of Alabama), A. JASON (Univ. of Alabama), and A. PARR (Univ. of Alabama)

Mar. 1979

M-FS-25033 Vol. 3, No. 4, p. 532

Method for coating forming coating of copper oxide from copper component of sheet aluminum/copper alloy provides strong durable solar heat collector panels. Copper oxide coating has solar absorption characteristics similar to black chrome and is much simpler and less costly to produce.

B78-10508

FIRE-RESISTANT WOOD COMPOSITES

P. M. SAWKO

Mar. 1979

ARC-11174 Vol. 3, No. 4, p. 532

Hot pressed wood panels made with modified novolak resins have burnthrough time of 450 s as compared to 280 s for products using conventional novolak resins. Incorporation of inorganic filler reduces flame spread index of panels from more than 200 to 60 or 70.

B78-10509

ANTISTATIC COATING FOR ACRYLICS

V. HADEK, A. REMBAUM, and R. B. SOMONO

Mar. 1979

NPO-13867 Vol. 3, No. 4, p. 534

After immersion in low molecular-weight solvents such as acetonitril or nitromethane, clear acrylic plastics dissipate up to 70% of induced electric charge within one minute, yet retain optical clarity.

B78-10510

COATED-FELT THERMAL INSULATION

R. L. DOTTS, B. J. MARAIA, J. A. SMITH, I. K. SPIKER, and G. STROUHAL

Mar. 1979

MSC-12737 Vol. 3, No. 4, p. 535

Thin coated-felt insulation tile is lighter and easier-to-install replacement for silica tiles for temperatures below 700 F.

B78-10511

LOW-TEMPERATURE REFINING OF COAL

P. S. GANGULI and G. C. MSU

Mar. 1979

NPO-14210 Vol. 3, No. 4, p. 535

Laboratory-tested process demonstrates technical feasibility of new low temperature chemical pretreatment of new coal that yields purified product with low sulfur, oxygen, and inorganic ash content.

B78-10512

ACCELERATED PURIFICATION OF COLLOIDAL SILICA SOLS

E. B. BAHNSEN (Lockheed Missiles and Space Co.), S. GAROFALINI (Lockheed Missiles and Space Co.), and A. PECHMAN (Lockheed Missiles and Space Co.)

Mar. 1979

MSC-16793 Vol. 3, No. 4, p. 536

Accelerated purification process for colloidal sols using heat/deionization scheme, sharply reduces waiting time between deionization cycles from several months to a few days. Process produces same high purity silica sols as conventional methods.

B78-10513**FORMING 'DYNAMIC' MEMBRANES ON STAINLESS STEEL**

C. A. BRANDON (Clemson University) and J. L. GADDIS (Clemson University)

Mar. 1979

MSC-18172**Vol. 3, No. 4, p. 537**

'Dynamic' zirconium polyacrylic membrane is formed directly on stainless steel substrate without excessive corrosion of steel. Membrane is potentially useful in removal of contaminated chemicals from solution through reversed osmosis. Application includes use in filtration and desalination equipment, and in textile industry for separation of dyes from aqueous solvents.

B78-10514**DEAERATING HIGH-VISCOSITY SILICON RUBBER**

R. W. GABRIEL (Rockwell Intern. Corp.)

Mar. 1979

MSC-16694**Vol. 3, No. 4, p. 538**

Method utilizing a modified hand operated centrifuge is used to deaerate high velocity (6,000 poise) silicon rubber for economical production of void-free silicon rubber seals.

B78-10515**HIGH-PRESSURE LIQUID CHROMATOGRAPHY OF AROMATIC AMINES**

P. R. YOUNG

Mar. 1979

LANGLEY-12163**Vol. 3, No. 4, p. 538**

Analysis made on commercially available liquid chromatograph demonstrates high-pressure liquid chromatographic conditions for separation of approximately 50 aromatic amines ranging from simple aniline derivatives to complex multiring di- and tri-amines.

B78-10516**AUTOMATED ELECTROPHORESIS APPARATUS**

L. R. BAKER (Univ. of Arizona), P. H. BARTELS (Univ. of Arizona), C. BLENMAN, JR. (Univ. of Arizona), J. M. HOLCOMB (Univ. of Arizona), and C. CHAN (Univ. of Arizona)

Mar. 1979

M-FS-23983**Vol. 3, No. 4, p. 540**

Computer-controlled electro-optical system tracks particles in essentially real-time, analyzes data, and presents video and hard copy results. System presents significant increase in sampling rate and improved analysis of particle motion.

B78-10517**IMPROVED IMIDE POLYMERIZATION CATALYST**

C. A. ESTRELLA, S. R. RICCIETELLO, and P. M. SAWKO

Mar. 1979

ARC-11107**Vol. 3, No. 4, p. 541**

Catalyzation of imide polymers with metallic salts of 2-ethyl hexanoic acid allows reaction in production of flame resistant foams to proceed in one step without formation of undesirable heat-sensitive byproducts.

B78-10518**POROUS BEAD PACKINGS FOR GAS CHROMATOGRAPHY**

G. E. POLLOCK and F. H. WOELLER

Mar. 1979

ARC-11222**Vol. 3, No. 4, p. 542**

Porous polyaromatic packing beads have low polarity, high efficiency, short retention time, and may be synthesized in size range of 50 to 150 micrometers (100 to 270 mesh). Mechanically strong beads may be produced using various materials depending on elements and compounds to be identified.

B78-10519**SCRATCH RESISTANT PLASTIC LENSES**

R. M. KUBACKI (Bell and Howell Co.)

Mar. 1979

ARC-11039**Vol. 3, No. 4, p. 543**

Three-step plasma deposition process coats plastic lenses with strongly adhering scratch-resistant polymer film.

B78-10520**MODEL OF SILICON PRODUCTION IN A FLUIDIZED-BED****REACTOR**

G. C. HSU, K. KIM, R. LUTWACK, and A. K. PRATUR

Mar. 1979 See also NASA-CR-154120 (N77-28581)

NPO-14404**Vol. 3, No. 4, p. 544**

Mathematical model of fluidized-bed process for making high-purity silicon suitable for use in solar cell production can help evaluate potential performance and economics of such processes.

05 LIFE SCIENCES**B78-10061****LOW-INTENSITY X-RAY AND GAMMA-RAY IMAGING DEVICE**

L. I. YIN

Jun. 1978

GSFC-12263**Vol. 3, No. 1, p. 67**

Low-dosage, low-power X-ray system can be made completely self-contained, allowing fluoroscopy and radiography to be carried out in field and remote locations. New device, known as 'lixiscope,' can be used with conventional X-ray machine turned down to low level, or, it can be operated with radioisotope source for hand-held portable applications. Originally developed for X-ray astronomy, lixiscope obtains high sensitivity by using intermediate stages of photoelectron conversion and electron amplification to generate image suitable for direct viewing or for recording on film.

B78-10062**DIP-MOLDED T-SHAPED CANNULA**

H. F. BROYLES, E. F. CUDDIHY, and J. MOACANIN

Jun. 1978

NPO-14073**Vol. 3, No. 1, p. 68**

Cannula, fabricated out of polyetherurethane, has been designed for long-term service. Improved cannula is T-shaped to collect blood from both directions, thus replacing two conventional cannulas that are usually required and eliminating need for large surgical wound. It is fabricated by using dip-molding process that can be adapted to other elastomeric objects having complex shapes. Dimensions of cannula were chosen to optimize its blood-flow properties and to reduce danger of excessive clotting, making it suitable for continuous service up to 21 days in vein or artery of patient.

B78-10063**IMPROVED CONTROL OF MEDICAL X-RAY FILM EXPOSURE**

C. M. BERDAHL

Jun. 1978

NPO-13808**Vol. 3, No. 1, p. 69**

Exposure sensing system for light-intensified motion-picture X-ray system uses aperture or adjustable diaphragm to sample light from image region of interest. Approach, along with approximate optics, can optimize exposure sensitivity.

B78-10064**SELF-STERILIZING CANISTER**

L. C. YANG

Jun. 1978

NPO-14237**Vol. 3, No. 1, p. 70**

Canister, originally conceived for remote sterilization of spacecraft packages, could be used terrestrially to handle samples in biologically hazardous environments. Multiwalled canister includes inner layer of pyrotechnic powder. For sterilization, electrically activated squib ignites powder, raising temperature of outer surface of canister to 230 degrees centigrade for several minutes. Thermal-buffer inner layer prevents inside temperature for exceeding 100 degrees centigrade to protect contents from damage. Samples in field hospitals and other emergency situations could also be handled by equipment.

B78-10065**CONTROLLED FREEZING OF BIOLOGICAL SAMPLES**

T. A. CYGNAROWICZ and T. E. WILLIAMS

Jun. 1978

GSFC-12173**Vol. 3, No. 1, p. 71**

Apparatus consists of thermocouple connected to semiconductor reference junction. Junction is connected to amplifier that boosts signal by 1,000. High-level signal is displayed on recorder and fed into second amplifier where it is compared with signal from potentiometer of programmed dc reference in bag-temperature programer. Difference in signals indicates output voltage. Remaining circuitry provides zero-phase, time-proportion control of heaters such that heater power is directly proportional to error signal.

B78-10066**BODY/BONE-MARROW DIFFERENTIAL-TEMPERATURE SENSOR**

V. J. ANSELMO and C. M. BERDAHL

Jun. 1978

NPO-14121**Vol. 3, No. 1, p. 72**

Differential-temperature sensor developed to compare bone-marrow and body temperature in leukemia patients uses single stable amplifier to monitor temperature difference recorded by thermocouples. Errors are reduced by referencing temperatures to each other, not to separate calibration points.

B78-10067**BACILLUS CEREUS STRAIN MCN AS A DEBRIDING AGENT**

H. P. DALTON (Medical Coll. of Virginia), B. W. HAYNES (Medical Coll. of Virginia), and L. L. STONE (Medical Coll. of Virginia)

Jun. 1978

LANGLEY-12287**Vol. 3, No. 1, p. 73**

Biologically active means are effective for rapidly removing scar tissue caused by burns or corrosive agents. Specially selected strain of bacteria applied to injury site releases enzymes which are active against eschar. These bacteria tend to locate between eschar and unburned tissue, thus providing optimal cell surface area arrangement for enzyme dispersal. Procedure may prove especially useful in treatment of disaster casualties under relatively primitive conditions.

B78-10068**FLUORESCENT MICROSPHERES**

A. REMBAUM

Jun. 1978

NPO-13946**Vol. 3, No. 1, p. 74**

Latex particles with attached antibodies have potential biochemical and environmental applications. Human red blood cells and lymphocytes have been labeled with fluorescent microspheres by either direct or indirect immunological technique. Immunolabelled spheres can also be used for detecting and localizing specific cell surface receptors. Hormones and toxins may also be bondable.

B78-10232**RAPID MEASUREMENT OF BACTERIA IN WATER**

E. CHAPPELLE, J. DEMING, G. L. PICCIOLO, E. L. JEFFERS (Boeing Co.), and R. R. THOMAS (Boeing Co.)

Oct. 1978

GSFC-12158**Vol. 3, No. 2, p. 237**

Automated analysis system detects bacteria in saltwater, freshwater, sewage effluent, and other aqueous media. System may be adapted for computer control.

B78-10233**MONITORING SYSTEMS FOR COMMUNITY WATER SUPPLIES**

R. E. TAYLOR (Boeing Co.), R. R. BROOKS (Boeing Co.), E. L. JEFFERS (Boeing Co.), A. T. LINTON (Boeing Co.), and G. D. POEL (Boeing Co.)

Oct. 1978 See also NASA-TM-X-58179 (N77-13909); B78-10234; B78-10236; B78-10237; B78-10267

MSC-16778**Vol. 3, No. 2, p. 238**

Water monitoring system includes equipment and techniques for waste water sampling sensors for determining levels of

microorganisms, oxygen, chlorine, and many other important parameters. System includes data acquisition and display system that allows computation of water quality information for real time display.

B78-10234**DATA PROCESSING FOR WATER MONITORING SYSTEM**

L. MONFORD and A. T. LINTON (Boeing Co.)

Oct. 1978 See also NASA-TM-X-58179 (N77-13909); B78-10233

MSC-16842**Vol. 3, No. 2, p. 240**

Water monitoring data acquisition system is structured about central computer that controls sampling and sensor operation, and analyzes and displays data in real time. Unit is essentially separated into two systems: computer system, and hard wire backup system which may function separately or with computer.

B78-10235**WATER SAMPLE-COLLECTION AND DISTRIBUTION SYSTEM**

R. R. BROOKS (Boeing Co.)

Oct. 1978

MSC-16841**Vol. 3, No. 2, p. 241**

Collection and distribution system samples water from six designated stations, filtered if desired, and delivers it to various analytical sensors. System may be controlled by Water Monitoring Data Acquisition System or operated manually.

B78-10236**AUTOMATED ELECTROCHEMICAL SELECTION OF COLIFORMS**

R. E. TAYLOR, W. P. DILL (Boeing Co.), and E. L. JEFFERS (Boeing Co.)

Oct. 1978 See also B78-10233

MSC-16777**Vol. 3, No. 2, p. 243**

Computer-controlled sensor system monitors and quantifies coliform organisms in waste water samples through molecular hydrogen detection techniques. System includes cleanup procedures, external sterilization of each sensor interface with working fluid as well as incubation cell interiors. Sensor system may also be operated manually.

B78-10237**CHEMILUMINESCENCE AND BIOLUMINESCENCE MICROBE DETECTION**

R. E. TAYLOR, E. CHAPPELLE (GSFC), G. L. PICCIOLO (U.S. Food and Drug Admin.), E. L. JEFFERS (Boeing Co.), and R. R. THOMAS (Boeing Co.)

Oct. 1978 See also B78-10233

MSC-16779**Vol. 3, No. 2, p. 244**

Automated biosensors for online use with NASA Water Monitoring System employs bioluminescence and chemiluminescence techniques to rapidly measure microbe contamination of water samples. System eliminates standard laboratory procedures requiring time duration of 24 hours or longer.

B78-10238**CHEMICAL MEASUREMENT OF URINE VOLUME**

R. L. SAUER

Oct. 1978

MSC-16585**Vol. 3, No. 2, p. 245**

Chemical method of measuring volume of urine samples using lithium chloride dilution technique, does not interfere with analysis, is faster, and more accurate than standard volumetric of specific gravity/weight techniques. Adaptation of procedure to urinalysis could prove generally practical for hospital mineral balance and catechoamine determinations.

B78-10239**ARTIFICIAL LEG WITH NATURAL GAIT**

J. L. BURCH

Oct. 1978

M-FS-23225**Vol. 3, No. 2, p. 246**

Prosthetic device employs actuator that stores energy from movement of natural leg and uses it to pivot artificial hip joint

in ensuing step reducing gait distortion and increasing stride cadence.

B78-10240
BOOSTING PRODUCTION YIELD OF BIOMEDICAL PEPTIDES

S. L. MANATT
Oct. 1978

NPO-14142 Vol. 3, No. 2, p. 247

Nuclear magnetic resonance (NMR) technique is employed to monitor synthesis of biomedical peptides. Application of NMR technique may improve production yields of insulin, ACTH, and growth hormones, as well as other synthesized biomedical peptides.

B78-10241
POSITIVELY CHARGED MEMBRANE FOR UREA DIALYSIS

W. A. MUELLER
Oct. 1978

NPO-14101 Vol. 3, No. 2, p. 248

Positively charged, porous membrane dividing two chamber dialysis machine allows urease decomposition within system while preventing return flow of ammonium ions to patient.

B78-10242
A PROBE FOR BLOOD-VESSEL AND SPINAL INTERIORS

R. E. FRAZER
Oct. 1978

NPO-14132 Vol. 3, No. 2, p. 248

Probe design allows insertion into lumen of blood vessels to perform oximetry and investigate plaque on interior vessel walls. Probe is more accurate than standard oximetry procedures of determining oxygenation of circulating blood.

B78-10243
STACKED SOLAR CELLS MEASURE X-RAY EXPOSURE

C. M. BERDAHL
Oct. 1978

NPO-13954 Vol. 3, No. 2, p. 250

Stacked arrangement of solar cells and scintillating sheets in alternating layers produces very sensitive X-ray measuring device. Sensor is compatible with short exposure times typical of modern X-ray film, making it suitable for application in medical soft X-ray facilities.

B78-10244
IN VIVO BLOOD-FLOW MAPPING

R. E. FRAZER
Oct. 1978

NPO-14133 Vol. 3, No. 2, p. 251

Application of laser doppler techniques to commercially available, low loss fiber optics allows direct reading of blood velocity within tiny blood vessels.

B78-10245
BIOLOGICAL SAMPLING AND CLEANING DEVICE

H. W. SCHEIDER
Oct. 1978

NPO-14010 Vol. 3, No. 2, p. 252

Flowing-liquid cleaner may be used to gently dislodge and remove 98 percent of biological particulates from surfaces. Cleaner may retain up to 90 percent of removed particulates for later analysis. If retention is not required, unit may be adapted to clean only. Cleaner is applicable wherever very clean surface is desired.

B78-10246
AUTOMATIC PRIMATE FEEDER

A. R. GANDY (Northrop Corp.)
Oct. 1978

LANGLEY-11586 Vol. 3, No. 2, p. 253

Zippered tubing and rotating wheel dispense food pellets reliably without contamination.

B78-10247
IMPROVEMENTS IN MICROELECTROPHORESIS AP-

PARATUS

B. W. GRUNBAUM (Univ. of Calif., Berkeley)
Oct. 1978

ARC-11121 Vol. 3, No. 2, p. 253

Improvements to conventional microelectrophoresis techniques can simplify and standardize clinical diagnosis of large electrically charged molecules. Improvements include special trays, tray and cell covers, membranes, and temperature controls.

B78-10362
REMOTELY-POWERED INTRACRANIAL PRESSURE MONITOR

T. B. FRYER
Jan. 1979

ARC-11120 Vol. 3, No. 3, p. 382

Implantable RF powered monitor uses capacitive transducer and stiff metal diaphragm that gives high stability for long term intracranial pressure monitoring. Design of monitor reduces risk of infection while improving patient comfort and mobility.

B78-10363
BIOMEDICAL APPLICATIONS OF ION-BEAM TECHNOLOGY

B. A. BANKS, A. J. WEIGAND, D. F. GIBBONS (Case Western Reserve Univ.), C. L. VANKAMPEN (St. Luke's Hospital), and C. A. BABBUSH

Jan. 1979 See also NASA-TM-X-73512 (N77-11655); NASA-TM-X-73468 (N76-30797); NASA-CR-135311 (N78-18672)

LEWIS-12807 Vol. 3, No. 3, p. 382

Microscopically-rough surface texture of various biocompatible alloys and polymers produced by ion-beam sputtering may result in improvements in response of hard or soft tissue to various surgical implants.

B78-10364
AUTOMATED CHROMOSOME ANALYSIS

K. R. CASTLEMAN, H. J. FRIEDEN, E. T. JOHNSON, P. A. RENNIE, and R. J. WALL

Jan. 1979

NPO-13913 Vol. 3, No. 3, p. 383

Minicomputer-controlled system automatically prepares and analyses blood samples and displays karyotype in pictorial form as primary output. System accuracy is assured by operator interaction at key points during process. System can process up to 576 specimens per day.

B78-10365
AUTOMATED CONTROLLER FOR LIQUID-COOLED GARMENTS

L. H. KUZNETZ

Jan. 1979 See also NASA-TM-58205 (N78-11704)

MSC-18055 Vol. 3, No. 3, p. 385

Automated controller is governed by inlet temperature of coolant and temperature differential across garment. Controller eliminates restrictive body attachments of physical sensors, while regulating temperature more efficiently than manual adjustment.

B78-10366
ANTIHISTAMINES REDUCE ULCERATION PRODUCED BY INDOMETHACIN

J. VERNIKOS-DANELLIS and P. A. BROWN (San Jose State Univ.)

Jan. 1979

ARC-11118 Vol. 3, No. 3, p. 386

Studies indicate that therapeutic application of antihistamines such as, metiamide, promethazine, or pyrilamide, may reduce occurrence of gastric ulceration produced by indomethacin.

B78-10367
SWEAT COLLECTION CAPSULE

R. W. DELAPLAINE and J. E. GREENLEAF
Jan. 1979

ARC-11031 Vol. 3, No. 3, p. 387

Capsule, with filter paper insert, is used to collect sweat for rate monitoring, chromatographic analysis, or active sweat gland

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location within specified area. Construction of capsule allows change of inserts while device remains strapped in place.

B78-10368

BIOCOMPATIBILITY OF SURGICAL IMPLANTS

D. H. KÄELBLE (Rockwell Intern. Corp.)

Jan. 1979

NPO-14291

Vol. 3, No. 3, p. 387

Method of selecting biocompatible materials for surgical implants uses fracture mechanic relationships and surface energies of candidate materials in presence of blood plasma. Technique has been used to characterize 190 materials by parameters that reflect their biocompatibility.

B78-10369

MICROPROCESSOR-BASED CARDIOPULMONARY MONITOR

J. A. RUMMEL, C. F. SAWIN, M. C. BUDERER (Technology Inc.), D. G. MAULDIN (Technology Inc.), and K. M. TAMER (Technology Inc.)

Jan. 1979 See also NASA-CR-151688 (N78-21752)

MSC-18235

Vol. 3, No. 3, p. 388

Incorporation of microprocessors in design of complete cardiopulmonary monitoring system allows size reduction and cuts power requirements by ninety percent.

B78-10370

RESTERILIZABLE ELECTRODE FOR ELECTROSURGERY

E. R. ENGSTROM (Univ. of Wisconsin-Madison) and J. C. HOUGE (Univ. of Wisconsin-Madison)

Jan. 1979

HQN-10915

Vol. 3, No. 3, p. 389

Required properties of flexibility, electrical conductivity, tensile strength, and tear resistance of electrosurgical electrodes is retained through utilization of flexible-polymer/conductive particle composites for electrodes.

B78-10371

RETAINER FOR LABORATORY ANIMALS

R. W. LEE

Jan. 1979

LANGLEY-12353

Vol. 3, No. 3, p. 390

Bio-retainer holds laboratory animals in fixed position for research and clinical experiments. Retainer allows full access to animals and can be rapidly opened and closed to admit and release specimens.

B78-10372

IMPROVED MYOCARDIUM TRANSDUCER

V. H. CULLER, C. FELDSTEIN, and G. W. LEWIS

Jan. 1979

NPO-14107

Vol. 3, No. 3, p. 391

Method of implanting myocardium transducer uses special indented pins that are caught and securely held by epicardial fibers. Pins are small enough to cause minimum of trauma to myocardium during implantation or removal.

B78-10373

IMPLANTABLE DIGITAL HEARING AID

A. M. KISSIAH, JR.

Jan. 1979

KSC-11009

Vol. 3, No. 3, p. 391

Hearing aid converts analog output of microphone into digital pulses in about 10 channels of audiofrequencies. Each pulse band could be directly connected to portion of auditory nerve most sensitive to that range.

B78-10374

AUTOMATED SYRINGE SAMPLER

G. C. PURGOLD

Jan. 1979

LANGLEY-12308

Vol. 3, No. 3, p. 393

Device is designed primarily for remotely collecting field samples of water or air from polluted sources or from tracer gases used to track such sources over long distances.

B78-10375

WIDEBAND EMG TELEMETRY SYSTEM

S. A. ROSATINO and R. M. WESTBROOK

Jan. 1979

ARC-11209

Vol. 3, No. 3, p. 394

Miniature, individual crystal-controlled RF transmitters located in EMG pressure sensors simplifies multichannel EMG telemetry for electronic gait monitoring. Transmitters which are assigned operating frequencies within 174 216 MHz band have linear frequency response from 20 - 2000 Hz and operate over range of 15 m.

B78-10376

MEDICAL INFORMATION MANAGEMENT SYSTEM

S. ALTERESCU, K. R. HIPKINS, and C. A. FRIEDMAN (Federal City College)

Jan. 1979

GSFC-12078

Vol. 3, No. 3, p. 396

On-line interactive information processing system easily and rapidly handles all aspects of data management related to patient care. General purpose system is flexible enough to be applied to other data management situations found in areas such as occupational safety data, judicial information, or personnel records.

B78-10521

SEPARATING BIOLOGICAL CELLS

D. E. BROOKS (Univ. of Oregon)

Mar. 1979

M-FS-23883

Vol. 3, No. 4, p. 547

Technique utilizing electric field to promote biological cell separation from suspending medium in zero gravity increases speed, reduces sedimentation, and improves efficiency of separation in normal gravity.

B78-10522

FLOW-COMPENSATING PRESSURE REGULATOR

E. F. BAEHR

Mar. 1979 See also B78-10523

LEWIS-12718

Vol. 3, No. 4, p. 548

Pressure regulator developed for use with cataract-surgery instrument controls intraocular pressure during substantial variations in flow rate of infusion fluid. Device may be applicable to variety of eye-surgery instruments.

B78-10523

INTRAOCULAR PRESSURE REDUCTION AND REGULATION

E. F. BAEHR and W. J. MCGANNON

Mar. 1979 See also B78-10522

LEWIS-12723

Vol. 3, No. 4, p. 549

System designed to reduce intraocular pressure hydraulically to any level desired by physician over set time and in controlled manner has number of uses in ophthalmology. Device may be most immediately useful in treatment of glaucoma.

B78-10524

HAND-HELD VITAL-SIGNALS MONITOR

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979

MSC-18232

Vol. 3, No. 4, p. 551

Complete miniaturized physiological vital-signs monitor displays body temperature, heart rate, and breath rate, and has provision to display blood-pressure data fed from external circuitry.

B78-10525

HYBRID TEMPERATURE-MONITORING CIRCUIT

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979 See also B78-10524

MSC-18231

Vol. 3, No. 4, p. 553

Hybrid circuit developed for use in hand-held vital signs monitor converts resistance of thermistor probe to 3 1/2 digit BCD (binary-coded-decimal) temperature readout. If used alone

circuit can form 'stand alone' temperature monitor or can transmit temperature data via telemetry to data acquisition systems.

B78-10526**HYBRID ECG SIGNAL CONDITIONER**

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979 See also B78-10524; B78-10528

MSC-18230 Vol. 3, No. 4, p. 554

Circuit with high common-mode rejection has ability to filter and amplify accepted analog electrocardiogram (ECG) signals of varying amplitude, shape, and polarity. In addition, low power circuit develops standardized pulses that can be counted and averaged by heart/breath rate processor.

B78-10527**HYBRID RESPIRATION-SIGNAL CONDITIONER**

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979 See also B78-10524; B78-10528

MSC-18226 Vol. 3, No. 4, p. 556

Hybrid impedance-pneumograph and respiration-rate signal conditioner element of hand-held vital signs monitor measures changes in impedance of chest during breathing cycle and generates analog respiration signal as output along with synchronous square wave that can be monitored by breath-rate processor.

B78-10528**HYBRID HEART/BREATH-RATE PROCESSOR**

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979 See also B78-10524; B78-10527

MSC-18227 Vol. 3, No. 4, p. 557

Single hybrid circuit converts time between pulses from ECG signal conditioner of breath-rate signal conditioner to determine heart-rate of respiration-rate output of hand-held vital signs monitor.

B78-10529**HYBRID LCD DRIVER**

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979 See also B78-10524

MSC-18229 Vol. 3, No. 4, p. 559

Display driver for hand-held signs monitor can be configured to operate either 4 digit or, by paralleling four drivers, to operate 16 digit liquid crystal display (LCD).

B78-10530**HYBRID CLOCK GENERATOR**

G. A. RINARD (Denver Res. Inst.), D. A. STEFFEN (Denver Res. Inst.), and R. E. STURM (Denver Res. Inst.)

Mar. 1979 See also B78-10524

MSC-18228 Vol. 3, No. 4, p. 560

Clock driver hybrid for hand-held vital signs monitor generates all frequencies required for operation of vital signs system in compact low power configuration.

B78-10531**IMPROVED PROBE FOR RECTAL-CANCER DETECTION**

R. E. FRAZER

Mar. 1979

NPO-14247 Vol. 3, No. 4, p. 562

Modified protosigmoidoscope, with third partially mirrored lens, provides lateral as well as forward vision for thorough examination of patients for malignant or premalignant lesions of colon and rectum.

B78-10532**SELF-PROPELLING, SELF-LOCATING COLONOSCOPE**

R. E. FAZER

Mar. 1979

NPO-14092 Vol. 3, No. 4, p. 563

Articulated instrument moves by air actuated bladder, while defining position by ultrasonic or RF signals. Device allows optical

inspection of large bowel from cecum to rectum with minimal discomfort or risk to patient.

B78-10533**NONCONTACTING ELECTROKINETOGRAPHY SYSTEM**

J. G. DAVIS (Lovelace-Bataan Medical Center) and D. M. HICKMAN (Lovelace-Bataan Medical Center)

Mar. 1979

MSC-18162 Vol. 3, No. 4, p. 564

Noncontact acoustic technique utilizing air-coupled ultrasonic transducers for measuring motion of chest wall during cardiac cycle gives information on changes in size and compliance of heart ventricles. Information is digitized and fed to microprocessor for rapid storage and analysis for aid in diagnosis of heart condition.

06 MECHANICS**B78-10069****AERODYNAMIC DESIGN LOWERS TRUCK FUEL CONSUMPTION**

L. STEERS

Jun. 1978

FRC-11015 Vol. 3, No. 1, p. 77

Energy-saving concepts in truck design are emerging from developing new shapes with improved aerodynamic flow properties that can reduce air-drag coefficient of conventional tractor-trailers without requiring severe design changes or compromising load-carrying capability. Improvements are expected to decrease somewhat with increased wind velocities and would be affected by factors such as terrain, driving techniques, and mechanical condition.

B78-10070**COMBINATION FORCE AND ANGULAR-DEFLECTION INDICATOR**

J. F. KAUPPI (Rockwell Intern. Corp.)

Jun. 1978

MSC-16155 Vol. 3, No. 1, p. 78

Verification of pedal operation is possible with tool that measures force and angular displacement. With tool, one can check both rudder- and break-pedal operation.

B78-10071**NONCONTACT MEASUREMENT OF ANGULAR DEFLECTION**

E. L. BRYANT

Jun. 1978

LANGLEY-12178 Vol. 3, No. 1, p. 79

Technique for measuring instantaneous angular deflection of object requires no physical contact. Technique utilizes two flat refractors, converging lens, and different photocell. Distinction of method is its combination of optical and electromechanical components into feedback system in which measurement error is made to approach zero. Application is foreseen in measurement of torsional strain.

B78-10072**LOW-COST ULTRASONIC LAMB-WAVE TRANSDUCER**

C. C. KAMMERER (Rockwell Intern. Corp.)

Jun. 1978

MSC-16333 Vol. 3, No. 1, p. 80

Transducer propagates Lamb wave through thin aluminum sheet material. Model includes two elements that measure effects of damping and loading which, in turn, are indirectly equated to bond integrity. Transducer has been used to evaluate bond integrity of aluminum facing adhesively bonded to aluminum facing. Because of versatility, it is now possible to inspect many objects of different configurations that could not be reached with earlier transducers.

06 MECHANICS

B78-10073

QUICK-AND-EASY SHEAR-LOAD TESTING

J. A. GUSTAFSON (Rockwell Intern. Corp.) and J. K. NEARY (Rockwell Intern. Corp.)
Jun. 1978

MSC-16765

Vol. 3, No. 1, p. 80

Device for applying shear loads to test specimens can be attached and removed without damaging specimen surface. Because it is quick, clean, and inexpensive, method is expected to be useful in commercial testing laboratories for applying shear loads to smooth surfaces on which there is no provision for conventional attachments and which could be easily damaged.

B78-10074

IMPROVED STRAIN-GAGE CALIBRATION

R. W. TROKE (Rockwell Intern. Corp.)

Jun. 1978

MSC-16852

Vol. 3, No. 1, p. 81

Accuracy of quarter-bridge strain gage is improved by accounting for nonlinearity of bridges output for equivalent compression and tension strains. Method provides relationships that connect measured strain and shunt calibration.

B78-10075

SURFACE EXAMINATION OF SMALL PARTICLES

B. C. BUZEK and T. K. GLASGOW

Jun. 1978 See also NASA TM-X-71749 (N75-30262)

LEWIS-12842

Vol. 3, No. 1, p. 82

Electron-microscopy specimen-preparation technique is used to study micron size particles. Process involves coating particles with vacuum-evaporated carbon, dissolving particles in solvent, then examining residue. Process is applicable to study of catalysts, nucleation and growth of metal oxides, and to determine chemical nature of lubricated surfaces after wear has occurred.

B78-10076

THERMOCOUPLES MEASURE VERY-HOT GAS TEMPERATURES

G. E. GLAWE, L. N. KRAUSE, and H. A. WILL

Jun. 1978 See also NASA TM-X-71883 (N76-18408)

LEWIS-12843

Vol. 3, No. 1, p. 83

Thermocouple probe incorporates small jet of inert gas to cool thermocouple. To measure gas temperatures, cooling jet is turned off momentarily, allowing thermocouple to heat up to near its melting point, then cooling is reapplied. Heating curve is recorded by high speed digital system. Computing system extrapolates final temperature thermocouple would have attained.

B78-10077

INFRARED SCANNERS FOR TEMPERATURE MEASUREMENT IN WIND TUNNELS

A. G. KANTSIOS

Jun. 1978

LANGLEY-12171

Vol. 3, No. 1, p. 84

Remote infrared scanners allow large surfaces to be studied without disturbing model and without extensive sensor installation. Computer techniques analyze data with accuracy of + or - 5 percent. Scanners are applicable to tracking and diffusion studies of rocket exhausts, nondestructive testing of rocket motor nozzles and composite materials, and detection of nonuniformity in home insulation.

B78-10078

NOISE CALCULATION ON THE BASIS OF VORTEX FLOW MODELS

J. C. HARDIN

Jun. 1978

LANGLEY-12271

Vol. 3, No. 1, p. 85

Flow-modeling technique yields relatively simple method for calculating sound radiation involving planar, cylindrical, or spherical surfaces. Model employs potential flow theory with action of viscosity on flowfield described in terms of point vortices. Surface presence in flow is analyzed, using classical image method; sound is calculated through sound generation theory reformulation.

B78-10079

THERMAL-CONTROL CANISTER

S. OLLENDORF

Jun. 1978

GSFC-12253

Vol. 3, No. 1, p. 87

Use of variable-conductance heat-pipe link together with fixed-conductance system allows canister temperature to vary over wide range, yet hold stable to + or - 1 degree Centigrade. System has fewer parts and requires considerably less power than conventional heaters and thermostats.

B78-10080

CRYOSTAT SAFETY TENT

J. L. MILLMAN

Jun. 1978

GSFC-12206

Vol. 3, No. 1, p. 88

Transparent vinyl tent is designed for easy assembly with minimum use of handtools. Tent prevents toxic or explosive vapors from entering building. Frame posts are mounted on casters to allow easy mobility.

B78-10081

FILM ADHESIVE ENHANCES NEUTRON RADIOGRAPHIC IMAGES

M. W. REED (Vought Missiles and Space Co.)

Jun. 1978

MSC-18061

Vol. 3, No. 1, p. 88

Resolution of neutron radiographic images of thermally conductive film is increased by replacing approximately 5 percent of aluminum powder, which provides thermal conductivity, with gadolinium oxide. Oxide is also chemically stable.

B78-10082

THERMAL COMPENSATOR FOR HELIUM REFRIGERATORS

J. J. HILLMAN and D. E. JENNINGS

Jun. 1978

GSFC-12168

Vol. 3, No. 1, p. 89

Closed-cycle helium refrigerator sensor generates negative-feedback control signals that drive heating diode to maintain temperature stability. Temperature-sensing diode and heating diode are mounted on heat sink that provides conductive path between load and cold tip. Method is applicable to other temperature-control applications, such as laser equipment, electronic instruments, and computer systems.

B78-10083

CALIBRATION TARGET FOR TEMPERATURE RADIOMETER

S. F. EDWARDS, W. F. STEWART, and D. S. VANN

Jun. 1978

LANGLEY-12239

Vol. 3, No. 1, p. 89

Technique measures temperature/voltage drop characteristics of very thin filament. With constant current running through filament, voltage drop is recorded at various temperatures, as measured by calibrated thermocouple.

B78-10084

RAPID LEAK DETECTION WITH LIQUID CRYSTALS

R. M. HEISMAN (Rockwell Intern. Corp.), W. F. ICELAND

(Rockwell Intern. Corp.), and E. P. RUPPE (Rockwell Intern. Corp.)

Jun. 1978

MSC-13804

Vol. 3, No. 1, p. 90

Small leaks in vacuum lines are detected by applying liquid-crystal coating, warming suspected area, and observing color change due to differential cooling by leak jet. Technique is used on inside or outside walls of vacuum-jacketed lines.

B78-10085

THERMAL-LEAK ANALYZER FOR VACUUM-JACKETED LINES

R. M. HEISMAN (Rockwell Intern. Corp.), W. F. ICELAND

(Rockwell Intern. Corp.), and E. P. RUPPE (Rockwell Intern. Corp.)

Jun. 1978

MSC-16802

Vol. 3, No. 1, p. 91

Technique involves coating suspected area with water-soluble black paint that gives even, infrared emission. Painted area is warmed with heat gun; an infrared scanner is used to detect

cooled spot on jacket exterior. Introduction of atmospheric pressure into jacket intensifies leak jet and improves test sensitivity.

B78-10086
LONG-LASTING SOLID-POLYMER ELECTROLYTIC HYDROMETER
 D. D. LAWSON
 Jun. 1978

NPO-13948 Vol. 3, No. 1, p. 92
 Device consists of hollow tube node of oxidation-resistant sulfonated fluorocarbon polymer. Tube absorbs moisture from air passing across inner and outer surfaces, causing change in polymer conductance. Change is related to change in water content in gas sample.

B78-10087
ULTRASONIC EVALUATION OF HIGH-VOLTAGE CIRCUIT BOARDS

S. J. KLIMA and T. J. RILEY
 Jun. 1978 See also NASA TM-X-73432 (N76-27475)
LEWIS-12781 Vol. 3, No. 1, p. 94
 Ultrasonic transmission technique, using reflector plate, indicates resistance to corona formation. Technique is useful as tool for mapping specific panels to permit selecting best areas of laminate for circuit board use. Procedure is relatively safe, fast, inexpensive, and uses commercially-available equipment.

B78-10088
FUSEHOLDERS ALLOW FAST SYSTEM CHECKOUT
 R. L. WOOTERS (Rockwell Intern. Corp.)
 Jun. 1978

MSC-16856 Vol. 3, No. 1, p. 95
 Technique involves modifying fuseholder cap with drilled hole to allow each circuit to be connected to automatic circuit analyzer. Tester is commercially-available continuity device used for checking out wiring harnesses that sequentially steps from one circuit to the next automatically. Test results are printed.

B78-10089
WINDOW FLAW DETECTION BY BACKSCATTER LIGHTING
 L. K. CROCKETT (Rockwell Intern. Corp.) and F. R. MINTON (Rockwell Intern. Corp.)
 Jun. 1978

MSC-16605 Vol. 3, No. 1, p. 96
 Portable fiber-optic probe detects tiny flaws in transparent materials. Probe transmits light through surface to illuminate interior of material by backscattering off its edges. Light-sensitive contact paper records scratch pattern. Technique can be used for rapid visual checks. Flexible fiber optics are safely used in explosive or flammable areas; they present no hazard of breakage or contamination in controlled environments.

B78-10090
PREDICTING SURFACE HEAT FLUX
 D. M. CURRY and S. D. WILLIAMS (Lockheed Electronics Co.)
 Jun. 1978 See also NASA TM-X-58176 (N76-20410); NASA TM-58204 (N77-27349)

MSC-16095 Vol. 3, No. 1, p. 97
 Report presents technique involving single embedded thermocouple used to predict flux and temperature for high-or-low conductivity materials that have temperature-and-pressure dependent properties. Technique solves for heat rate and temperature at given surface at each time step, rather than for entire history. Newton-Raphson technique is used for temperature solutions; then quadratic fit is employed. Report contains representative graphs and tables.

B78-10091
APPROACH AND LANDING SIMULATION
 A. J. OSTROFF and R. B. WOOD (Vought Missiles and Space Co.)
 Jun. 1978

LANGLEY-12060 Vol. 3, No. 1, p. 98
 Computer program integrates avionics research in navigation, guidance, controls, and displays with realistic aircraft model. Program gives researchers capability of evaluating avionics area

independently from other research areas and thus allows more flexibility in time schedules. Program comprises many independent modules that represent specific hardware onboard actual aircraft.

B78-10092
STABILITY CHARACTERISTICS OF ELASTIC AIRPLANE
 L. L. ERICKSON
 Jun. 1978

ARC-11144 Vol. 3, No. 1, p. 99
 System of computer programs uses linear theories to evaluate static and dynamic stability, trim state, inertial, and aerodynamic loading, and elastic deformations of aircraft configurations at subsonic and supersonic speeds. Primary emphasis is on analysis of stability and control characteristics of flexible aircraft. System also solves simple rigid aerodynamic problems.

B78-10093
WAKE AND WASH
 F. O. SMETANA (North Carolina State Univ.) and D. C. SUMMEY (North Carolina State Univ.)
 Jun. 1978
LANGLEY-12262 Vol. 3, No. 1, p. 100
 Two computer programs determine onset flow in vicinity of horizontal tail of light aircraft.

B78-10094
FLOW VELOCITIES AND STREAMLINES
 T. KATSANIS and W. D. MCNALLY
 Jun. 1978 See also B74-10130
LEWIS-12966 Vol. 3, No. 1, p. 100

Computer program calculates subsonic or transonic flow on hubshroud, midchannel, stream surface of single-blade row of turbomachine. Program uses finite-different and quasi-orthogonal (velocity-gradient) methods. Program is reported in two volumes: Part I is User's Manual, Part II is Programmer's Manual.

B78-10095
HYDRAULIC DYNAMIC ANALYSIS
 R. L. GALE (Rockwell Intern. Corp.), A. W. NEASE (Rockwell Intern. Corp.), and D. J. NELSON (Rockwell Intern. Corp.)
 Jun. 1978

MSC-16795 Vol. 3, No. 1, p. 101
 Computer program mathematically describes complete hydraulic systems to study their dynamic performance. Program employs subroutines that simulate components of hydraulic system, which are then controlled by main program. Program is useful to engineers working with detailed performance results of aircraft, spacecraft, or similar hydraulic systems.

B78-10096
PERFORMANCE OPTIMIZING
 B. CLARK (Virginia Univ.), W. D. PILKEY (Virginia Univ.), and B. P. WANG (Virginia Univ.)
 Jun. 1978

LANGLEY-11930 Vol. 3, No. 1, p. 101
 System of computer programs determines optimal behavior of structural-mechanical system subject to transient disturbances or loadings. Program makes it possible to approach design problem directly from design criteria without prior commitment to particular design concept.

B78-10097
DYNAMICS OF GAS-THRUST BEARINGS
 A. K. STIFFLER (Mississippi State Univ.) and R. R. TAPIA (Mississippi State Univ.)
 Jun. 1978

LEWIS-12754 Vol. 3, No. 1, p. 102
 Computer program calculates load coefficients, up to third harmonic, for hydrostatic gas thrust bearings. Program is useful in identification of industrial situations where gas-thrust bearings have potential applications.

B78-10248
PSUEDO-CONTINUOUS-WAVE ACOUSTIC INSTRUMENT
 J. S. HEYMAN and F. D. STONE

06 MECHANICS

Oct. 1978

LANGLEY-12260 Vol. 3, No. 2, p. 257

Simple, inexpensive, and portable ultrasonic device accurately measures acoustic properties of liquids, gases, and solids, using pseudo-continuous wave responses from samples to measure change in resonant frequency or amplitude in acoustic signal.

B78-10249

MASS SPECTROMETER CALIBRATION STANDARD

D. S. ROSS

Oct. 1978

NPO-14097 Vol. 3, No. 2, p. 258

Inert perfluorinated alkane and alkyl ethers mixture is used to calibrate mass spectrometer. Noncontaminating, commercially-available liquid provides series of reproducible reference peaks over broad mass spectrum that ranges over mass numbers from 1 to 200.

B78-10250

DAMAGE-DETECTION SYSTEM FOR LNG CARRIERS

J. R. MASTANDREA (McDonnell Douglas Corp.) and M. V. SCHERB (McDonnell Douglas Corp.)

Oct. 1978

LANGLEY-11463 Vol. 3, No. 2, p. 258

System utilizes array of acoustical transducers to detect cracks and leaks in liquefied natural gas (LNG) containers onboard ships. In addition to detecting leaks, device indicates location and leak rate.

B78-10251

FREE-AIR CONTENT IN FLUID SYSTEMS

G. R. GUM (Rockwell Intern. Corp.)

Oct. 1978

MSC-16703 Vol. 3, No. 2, p. 260

Nomograph used with compressibility tester automatically finds amount of free-air within closed fluid system. Device reduces time required for task and reduces likelihood of error.

B78-10252

TESTING COMPOSITE SHEETS AT HIGH TEMPERATURES

J. S. JONES (Rockwell Intern. Corp.) and B. J. PAYNE (Rockwell Intern. Corp.)

Oct. 1978

MSC-16237 Vol. 3, No. 2, p. 260

Candidate materials for skins of flexural sandwich beams can be compressive- or tensile-tested at high temperature by using corrosion resistant steel (CRES) for core material. Tests with CRES core have been made at temperatures as high as 260 C. Future tests at temperatures above 371 C may be permissible.

B78-10253

FLUIDIC-OSCILLATOR GAS ANALYZER

E. A. FABER (Univ. of Florida)

Oct. 1978

KSC-11014 Vol. 3, No. 2, p. 261

Fluidic oscillator identifies hazardous single, and multicomponent gases. Since oscillator has no moving parts, it is highly reliable.

B78-10254

IMPROVED ELECTRON-BEAM PROBE FOR HYPERSONIC FLOWS

A. D. MCRONALD

Oct. 1978

NPO-13793 Vol. 3, No. 2, p. 261

Probe uses differentially-pumped drift tube to connect high and low pressure regions thereby allowing higher gas densities to be studied. System uses higher beam voltages (50 kV) and currents (1 mA delivered to gas), and extends boundary layer penetration up to 15.2 cm, and test duration to one hour.

B78-10255

DETECTION OF BOUNDARY-LAYER TRANSITIONS IN WIND TUNNELS

W. R. WOOD and D. M. SOMERS

Oct. 1978

LANGLEY-12261 Vol. 3, No. 2, p. 263

Accelerometer replaces stethoscope in technique for detection of laminar-to-turbulent boundary-layer transitions on wind-tunnel models. Technique allows measurements above or below atmospheric pressure because human operator is not required within tunnel. Data may be taken from accelerometer, and pressure transducer simultaneously, and delivered to systems for analysis.

B78-10256

HELICOPTER POSITION STABILIZING SYSTEM

K. R. JENKIN (TRW, Inc.)

Oct. 1978

LANGLEY-11670 Vol. 3, No. 2, p. 264

System utilizes vertical gyroscope mounted on telescope handled by onboard observer, to help helicopter pilot fly precise circles over ground target without use of ground observer. Other possible uses include cargo discharge or pickup without ground controller, and hovering over invisible target with known coordinates.

B78-10257

AIRFRAME DESIGN FOR REDUCING CABIN NOISE

G. L. GETLINE (Gen. Dy. Corp.)

Oct. 1978 See also NASA-CR-145104 (N77-15029)

LANGLEY-12097 Vol. 3, No. 2, p. 265

Low-frequency noise might be reduced by stiffness-control of airframe structure.

B78-10258

PREDICTING DAMAGE FROM EXPLODING VESSELS

W. E. BAKER (Southwest Res. Inst.), R. L. BESSEY (Southwest Res. Inst.), J. J. KULESZ (Southwest Res. Inst.), G. A. OLOHAM (Southwest Res. Inst.), V. B. PARR (Southwest Res. Inst.), R. E. RICKER (Southwest Res. Inst.), and P. S. WESTINE (Southwest Res. Inst.)

Oct. 1978 See also NASA-CR-134906 (N76-19296)

LEWIS-13042 Vol. 3, No. 2, p. 267

Workbook provides designer and safety engineer with best currently available technology for predicting damage and hazards from explosions of propellant tanks and bursts of pressure vessels.

B78-10259

AIR CUSHION LANDING SYSTEM

K. M. BOGHAMI (Foster Miller Assoc.), K. M. CAPTAIN (Foster Miller Assoc.), and R. B. FISH (Foster Miller Assoc.)

Oct. 1978

LANGLEY-12303 Vol. 3, No. 2, p. 267

Static and dynamic performance of air cushion landing system is simulated in computer program that treats four primary ACLS subsystems: fan, feeding system, trunk, and cushion. Configuration of systems is sufficiently general to represent variety of practical designs.

B78-10260

INTERNAL AND EXTERNAL 2-D BOUNDARY LAYER FLOWS

M. E. CRAWFORD (Stanford Univ.) and W. M. KAYS (Stanford Univ.)

Oct. 1978

LEWIS-13009 Vol. 3, No. 2, p. 268

Computer program computes general two dimensional turbulent boundary-layer flow using finite-difference techniques. Structure allows for user modification to accommodate unique problems. Program should prove useful in many applications where accurate boundary-layer flow calculations are required.

B78-10261

STRESS ANALYSIS UNDER COMPONENT RELATIVE INTERFERENCE FIT

C. M. TAYLOR (Univ. of Leeds, England)

Oct. 1978

LEWIS-12911 Vol. 3, No. 2, p. 268

Finite-element computer program enables analysis of distortions and stresses occurring in components having relative interference. Program restricts itself to simple elements and axisymmetric loading situations. External inertial and thermal loads

may be applied in addition to forces arising from interference conditions.

B78-10262**EDGE GEOMETRY OF TURBOMACHINE BLADES**

L. F. SCHUMANN (U. S. Army Air Mobility R and D Lab.)

Oct. 1978

LEWIS-12979

Vol. 3, No. 2, p. 269

Computer program calculates leading- and trailing-edge circle radii, tangency angles on leading- and trailing-edge circles, and stagger angle of turbomachinery blade sections, using only spline points defining blade surfaces.

B78-10263**THERMAL PERFORMANCE OF SHAFT BEARING SYSTEM**

W. CRECELIUS (SKF Industries, Inc.)

Oct. 1978

LEWIS-12761

Vol. 3, No. 2, p. 269

Computer program calculates loads, torques, temperature, and fatigue life of multibearing shaft system operating with either wet or dry friction. Program is also capable of predicting system reactive to termination of lubricant supply to bearings and other lubricated mechanical elements.

B78-10264**STRUCTURAL PERFORMANCE ANALYSIS AND REDESIGN**

W. D. WHETSTONE (Engineering Info. Sys. Co.)

Oct. 1978

LANGLEY-12213; LANGLEY-12234; M-FS-23944

Vol. 3, No. 2, p. 270

Program performs stress buckling and vibrational analysis of large, linear, finite-element systems in excess of 50,000 degrees of freedom. Cost, execution time, and storage requirements are kept reasonable through use of sparse matrix solution techniques, and other computational and data management procedures designed for problems of very large size.

B78-10265**THERMAL HYDRAULIC ANALYZER**

E. E. GARCIA (Rockwell Intern. Corp.) and R. W. SANTEN (Rockwell Intern. Corp.)

Oct. 1978

MSC-18014; MSC-16797; MSC-16877 Vol. 3, No. 2, p. 271

Program solves both transient and steady-state thermal problems, steady-state hydraulic problems, and combined thermal, and hydraulic transient or steady-state problems.

B78-10266**ANALYSIS OF LINEAR VISCOELASTIC STRUCTURES**

K. K. GUPTA and E. HEER

Oct. 1978

NPO-13197

Vol. 3, No. 2, p. 271

General purpose program solves equilibrium problems associated with one-, two-, and three-dimensional linear thermoviscoelastic structures. Program can be used to analyze wide variety of structures constructed of any isotropic, orthotropic, or anisotropic material.

B78-10377**NONCONTACT OPTICAL COMMUNICATION BETWEEN MOVING STATIONS**

D. C. CUNNINGHAM (Sperry Rand Corp.) and B. J. HAMILTON (Sperry Rand Corp.)

Jan. 1979

LANGLEY-12283

Vol. 3, No. 3, p. 399

Optical coupler allows non-contact data transfer between parts having several degrees of relative motion. Rotation about one axis and limited axial and radial motion will not interrupt communications.

B78-10378**PHOTOVOLTAIC SYSTEMS TEST FACILITY**

Innovator not given (Lewis Research Center) Jan. 1979

LEWIS-13073

Vol. 3, No. 3, p. 400

Facility provides broad and flexible capability for evaluating photovoltaic systems and design concepts. As 'breadboard' system,

it can be used to check out complete systems, subsystems, and components before installation in actual service.

B78-10379**RUBY C-AXIS ALIGNMENT SYSTEM**

R. C. CLAUSS and F. E. MCCREA

Jan. 1979

NPO-14252

Vol. 3, No. 3, p. 401

System locates C-axis of ruby slab fabricated for maser application to within + or - 3 minutes of arc at room temperature easier and faster than conventional procedures.

B78-10380**MODULATION IMPROVES ELECTRO-OPTIC OBJECT DETECTOR**

J. R. CURRIE and R. R. SCHANSMAN

Jan. 1979

M-FS-23776

Vol. 3, No. 3, p. 402

Device as part of integrated circuit protection line is used to detect presence or absence of silicon wafer at point along air track. System is insensitive to ambient light and electrical noise, requires no special components or adjustments, operates from single supply source, and is relatively inexpensive to build.

B78-10381**IMPROVED HEAT-PIPE WICK**

F. G. ARCELLA (Westinghouse Electric Corp.) and E. C. PHILLIPS, JR. (Westinghouse Electric Corp.)

Jan. 1979

NPO-13391

Vol. 3, No. 3, p. 403

Fabrication techniques in application with conventional heat pipe-wick technology produces high quality annular wicks with smaller pores, higher density, and greater rigidity.

B78-10382**CALCULATION OF PLANAR-TRUSS MODAL FREQUENCIES**

R. M. GATES (Boeing Aerospace Co.)

Jan. 1979

LANGLEY-12137

Vol. 3, No. 3, p. 404

Simplified method for calculating modal frequencies of four types of large area planar trusses (tetrahedral, pentahedral, hexahedral, and radial rib) treat trusses as equivalent circular plates thus allowing classical plate theories to be used.

B78-10383**IMPROVED NOTATION CONTROLLER**

J. DONOHUE and H. C. HOFFMAN

Jan. 1979

GSFC-12273

Vol. 3, No. 3, p. 404

Notation controller equipped with angular accelerometer stabilizes spinning bodies without precise positioning or calibration.

B78-10384**HIGH-TEMPERATURE MICROPHONE SYSTEM**

A. J. ZUCKERWAR (Old Dominion Univ. Res. Foundation)

Jan. 1979

LANGLEY-12375

Vol. 3, No. 3, p. 405

Microphone system that measures pressure fluctuations in air or other gases is not unduly effected by temperature or rate-of-change of temperature. Easily fabricated system has proved operable at temperatures up to 430 C.

B78-10385**A SOLID-STATE PHASE-INSENSITIVE ULTRASONIC TRANSDUCER**

J. S. HEYMAN

Jan. 1979

LANGLEY-12304

Vol. 3, No. 3, p. 406

Photoconductive acoustoelectric transducer (AET) functions as phase-insensitive ultrasonic transducer. Device is easy to use and requires no additional noisy components such as light or thermal source.

B78-10386**NO2 MEASUREMENT BY CHEMILUMINESCENCE**

E. J. CONWAY, R. S. ROGOWSKI, and R. R. RICHARDS

06 MECHANICS

(Greenville College)

Jan. 1979

LANGLEY-11378

Vol. 3, No. 3, p. 407

Compact device monitors specific chemiluminescent reaction of heated solid material such as 3,5 diaminobezoic or polyvinyl alcohol after contact with gas sample to detect and quantify nitrogen dioxide concentration.

B78-10387

MEASURING POISSON'S RATIO IN ELASTOMERS

J. M. CLEMONS

Jan. 1979

M-FS-23878

Vol. 3, No. 3, p. 408

Simple water-displacement device rapidly and accurately determines poisson's ratio for elastometric materials.

B78-10388

CALIBRATION STANDARDS FOR PIND TESTS

S. GAUDIANO

Jan. 1979

MSC-18169

Vol. 3, No. 3, p. 408

Calibrated set of microcircuit packages containing tiny particles with known masses can be used as reference standards for Particle-Impact Noise-Detection (PIND) tests.

B78-10389

SHOCK DURING PIND TEST FREES PARTICLES

S. V. CARUSO and F. Z. KEISTER (Hughes Aircraft Co.)

Jan. 1979

M-FS-23829

Vol. 3, No. 3, p. 409

Recent study on Particle-Impact Noise-Detection (PIND) shows impact at 1,500 to 4,000 G normally imparted to hybrid microcircuits during testing knocks loose stray trapped particle that can be subsequentially removed. Process may be 80 to 90 percent effective in removal of particles depending on type of test utilized.

B78-10390

TEMPERATURE-GRADIENT OVEN

S. JUE (Grumman Aerospace Corp.)

Jan. 1979

M-FS-23919

Vol. 3, No. 3, p. 409

Tubular oven operates on principle of lengthwise linear temperature gradient of homogeneous conductive rod in absence of radiative or convective heat loss. Oven can be applied to controlled heating or cooling of test specimens.

B78-10391

AUTOMATED TEMPERATURE-CYCLING APPARATUS

M. L. LOCKARD

Jan. 1979

LANGLEY-12310

Vol. 3, No. 3, p. 410

Apparatus is used to test materials reaction to thermal shock by moving specimens between two chambers at high and low temperature extremes for specified number of cycles. Electrically motored system is completely automatic saving time and costs.

B78-10392

STANDARDIZED GAS-TEMPERATURE PROBES

G. E. GLAWE, R. HOLANDA, and L. N. KRAUSE

Jan. 1979 See also NASA-TP-1099 (N78-15463)

LEWIS-13059

Vol. 3, No. 3, p. 411

Standardization by two general probe designs and determination of various correction factors for range of sizes in each design reduces requirements for individual calibration and associated costs.

B78-10393

ORIFICE CALIBRATION MODULE

R. CULOTTA and D. L. POSEY

Jan. 1979

LANGLEY-12269

Vol. 3, No. 3, p. 412

Module, consisting of transparent plastic cylinder containing separate suction and calibration chambers, allows static-pressure orifices to be calibrated, and rapidly checked for leaks.

Device is compact, saves time, and improves accuracy, and reliability of pressure measurements.

B78-10394

ELECTRONICALLY-SCANNED PRESSURE MEASUREMENT SYSTEM

T. BASTA, JR., C. GROSS, and D. B. JUANARENA

Jan. 1979

LANGLEY-12386

Vol. 3, No. 3, p. 413

Sensor and associated microcomputer-based data acquisition unit can measure up to 1,024 unknown pressures at data rates as high as 10 kHz with maximum system inaccuracies of + or - 0.25 percent of full scale. System can be calibrated in place, making it easy to calibrate between runs for high cost or short run time wind tunnel testing.

B78-10395

STATIC-PRESSURE PROBE FOR SMALL GEOMETRIES

S. Z. PINCKNEY

Jan. 1979 See also NASA-TN-D-7978 (N75-27305)

LANGLEY-11552

Vol. 3, No. 3, p. 414

Contoured pressure probe with static orifices located near tip is more effective than conventional probes in taking measurements in small high-Reynolds number geometries such as nozzles or flow inlets. Probe is less sensitive to pressure gradients and off axis variations in flow directions over short distances.

B78-10396

DETECTING SERVO FAILURES WITH SOFTWARE

D. LEW (Rockwell Intern. Corp.) and R. QUAM (Rockwell Intern. Corp.)

Jan. 1979

FR-11003

Vol. 3, No. 3, p. 415

Program detects hardware failure in servosystems by comparing actual servo valve position with predictions of software model. In addition, system will also pick up most computer input/output failures. Process presents faster and more reliable results than previous failure detection methods.

B78-10397

PENETRATING FIRE EXTINGUISHER

N. C. GRAY, P. N. BOLTON (Boeing Co.), and R. M. SENSENY (Boeing Co.)

Jan. 1979

KSC-11064

Vol. 3, No. 3, p. 416

Fire extinguisher with replaceable hard pointed tip is used to penetrate metal skins, wall panels, and other barriers and inject fire extinguishing chemicals.

B78-10398

HIGH-TEMPERATURE CAPACITIVE PRESSURE TRANSDUCER

R. L. EGGER (Boeing Aerospace Co.), R. A. MICKELSEN (Boeing Aerospace Co.), D. W. NELSON (Boeing Aerospace Co.), and E. J. NELSON (Boeing Aerospace Co.)

Jan. 1979 See also NASA-CR-135282 (N77-33483)

LEWIS-13078

Vol. 3, No. 3, p. 416

Capacitive pressure transducer operates continuously at temperatures as high 1,2000 F, and has been evaluated over full-scale differential pressure range of + or - 10 psi (69 x 1000 N/sq m).

B78-10399

DIRECTORY OF FIRE RESEARCH SPECIALISTS

T. L. JUNOD, G. MANDEL, and N. H. JASON (NES)

Jan. 1979 See also NASA-CR-135089 (N77-30271)

LEWIS-13123

Vol. 3, No. 3, p. 417

Directory indexes, 1,475 researchers and various organizations in the United States or Canada who have recently participated in or made contributions to fire science research or related areas of concern.

B78-10400

NACELLE INCREMENTAL DRAG

A. W. KNUDSEN (Rockwell Intern. Corp.) and R. Y. MAIRS (Rockwell Intern. Corp.)

Jan. 1979

LEWIS-12786

Vol. 3, No. 3, p. 417

Program is used to provide rapid approximate methodology for comparing alternative propulsion system designs for supersonic transports.

B78-10401**WING AERODYNAMICS UNDER BLOWING JETS**

C. H. FOX, JR., G. L. FILLMAN (Univ. of Kansas), and C. E. LAN (Univ. of Kansas)

Jan. 1979

LANGLEY-12256

Vol. 3, No. 3, p. 418

Program determines aerodynamic characteristics of arbitrary wings under influence of single centered jet of pair of jets blowing on or above plane of wing.

B78-10402**ANALYSIS OF BEAM COLUMNS**

L. I. GUIDRY (Rockwell Intern. Corp.)

Jan. 1979

MSC-18009

Vol. 3, No. 3, p. 418

FORTRAN IV program determines displacements, bending moments, and critical column loads for straight elastic beams or column beams.

B78-10403**SOLAR-ELECTRIC GEOCENTRIC TRANSFER**

H. L. MALCHOW (Charles Stark Draper Lab., Inc.) and L. L. SACKETT (Charles Stark Draper Lab., Inc.)

Jan. 1979

LEWIS-12939

Vol. 3, No. 3, p. 419

Time-optimal or nearly-time-optimal trajectory computer program developed for solar-electric geocentric transfer considers yaw motion only, yaw and roll only, and unconstrained motion configurations.

B78-10404**CONVECTIVELY COOLED STRUCTURES**

A. R. WIETING and E. A. THORNTON (Old Dominion Univ.)

Jan. 1979

LANGLEY-12347

Vol. 3, No. 3, p. 419

Finite-element program called TAP 1 aids in steady state thermal analysis of structures that employ conductive or convective heat transfer.

B78-10405**ANALYSIS OF CRACKED ORTHOTROPIC SHEETS**

J. A. ABERSON (Georgia Inst. of Tech.), J. M. ANDERSON (Georgia Inst. of Tech.), W. J. BATDORF (Lockheed-Georgia Co.), and C. CHU (Lockheed-Georgia Co.)

Jan. 1979

LANGLEY-12288

Vol. 3, No. 3, p. 420

Computer program performs two dimensional elastostatic analysis of plane anisotropic homogeneous sheets with through-the-thickness cracks and temperature gradients.

B78-10406**PREDICTING ROTOR ROTATION NOISE**

R. N. HOSIER (USAAMRDL), R. RAMAKRISHNAN (George Washington Univ.), and D. RANDALL (Computer Sci. Corp.)

Jan. 1979

LANGLEY-12098

Vol. 3, No. 3, p. 420

Program uses multiple sets of measured or hypothetical high-frequency blade-loading coefficients to calculate rotational noise of stationary helicopter rotors.

B78-10534**REAL-TIME INSTRUMENT AVERAGES 100 DATA SETS**

A. G. BIRCHENOUGH, W. J. RICE, and G. B. TOMA

Mar. 1979 See also NASA-TP-1055 (N78-11301)

LEWIS-13093

Vol. 3, No. 4, p. 567

Instrument generates average curve of 100 consecutive cycles of any function that occurs as time varying electrical signal. Device has been used to average parameters on 1975 Chevrolet V-8 engine, and on Continental six cylinder aircraft engine.

B78-10535**MINIATURE THERMOCOUPLE DISCONNECT**

K. L. QUINN

Mar. 1979

LANGLEY-12013

Vol. 3, No. 4, p. 568

Commercially available subminiature connector modified for utilization with both flexible and small diameter metal-sheathed thermocouples results in reliable thermocouple for instrumentation on wind-tunnel models smaller than commercial disconnects normally used.

B78-10536**HIGH-SAMPLING-RATE PRESSURE TRANSDUCER HAS IN SITU CALIBRATION**

C. GROSS

Mar. 1979

LANGLEY-12230

Vol. 3, No. 4, p. 569

High-data-rate pressure sensor module can be calibrated after it is attached to an experimental setup. Electrically multiplexed sensor is designed for use in wind-tunnels and other applications requiring accurate measurement of many pressures in a short period of time.

B78-10537**SHOCK-SWALLOWING AIR SENSOR**

J. NUGENT, G. M. SAKAMOTO, L. D. WEBB, and L. M. COUCH (Langley Res. Center)

Mar. 1979

FRC-10107

Vol. 3, No. 4, p. 570

An air-data probe allows air to flow through it so that supersonic and hypersonic shock waves form behind pressure measuring orifices and tube instead of directly on them. Measured pressures are close to those in free-flowing air and are used to determine mach numbers of flying aircraft.

B78-10538**MEASURING PROJECTILE SPEED**

J. E. JORDAN and P. C. KASSEL, JR.

Mar. 1979

LANGLEY-12387

Vol. 3, No. 4, p. 571

Apparatus uses optoelectric detector to measure station-to-station time-of-flight of small spherical aluminum projectile down steel barrel. Instrument has been used to study impact resistance of composite materials used in aircraft structural research program.

B78-10539**MINIATURE VELOCIMETER**

J. M. FRANKE, W. W. HUNTER, JR., J. F. MEYERS, and S. L. OCHELTREE

Mar. 1979

LANGLEY-12281

Vol. 3, No. 4, p. 572

Laser velocimeter (LV) designed to use semiconductor-diode laser is 100 times smaller than continuous-wave gas-laser velocimeter permitting mounting within wind-tunnel models or on engine walls. Mini LV uses only 0.4 watts of power and measures velocities with accuracy of 98% or better.

B78-10540**MULTIPLE-SAMPLE HOLDER FOR IC TESTING**

R. F. HAACK

Mar. 1979

NPO-14314

Vol. 3, No. 4, p. 573

Carrousel tray speeds up testing process by feeding mass spectrometer up to 12 sealed integrated circuit packages in rapid succession for analysis of contaminants and total gas composition.

B78-10541**SEM PROBE OF IC RADIATION SENSITIVITY**

M. K. GAUTHIER and A. G. STANLEY

Mar. 1979

NPO-14350

Vol. 3, No. 4, p. 574

Scanning Electron Microscope (SEM) used to irradiate single integrated circuit (IC) subcomponent to test for radiation sensitivity can localize area of IC less than .03 by .03 mm for determination of exact location of radiation sensitive section.

06 MECHANICS

B78-10542

TOPPING PRESSURE FOR GAS-STORAGE CYLINDERS

R. L. HABEN (Rockwell Intern. Corp.)

Mar. 1979

MSC-18186

Vol. 3, No. 4, p. 575

With charts derived from gas-storage system model, required topping pressure can be determined from initial cylinder pressure and temperature of gas entering cylinder. Charts are available for hydrogen and oxygen and can be developed for other important industrial gases as well.

B78-10543

DYNAMIC MEASUREMENT OF BULK MODULUS

W. L. DOWLER and L. D. STRAND

Mar. 1979

NPO-13226

Vol. 3, No. 4, p. 576

Technique based on measuring phase difference between microwave reference and test signals and has been used to determine change in bulk modulus of solid-fuel rocket propellants should be useful in studying other dielectric materials.

B78-10544

ELASTIC DEFORMATION OF BALL BEARINGS, GEARS, AND CAMS

B. J. HAMROCK and D. E. BREWE (U.S. Army Res. and Development Labs.)

Mar. 1979 See also NASA-TM-X-3407 (N76-26517); B77-10414; B77-10415

LEWIS-13076

Vol. 3, No. 4, p. 577

Simplified technique aids designers in calculation of elastic deformation at center of contact area for ball bearings, gears, cams, and similar components.

B78-10545

COMPACT TURBIDITY METER

J. G. HIRSCHBERG (Univ. of Miami)

Mar. 1979

KSC-11063

Vol. 3, No. 4, p. 578

Proposed monitor that detects back-reflected infrared radiation makes in situ turbidity measurements of lakes, streams, and other bodies of water. Monitor is compact, works well in daylight as at night, and is easily operated in rough seas.

B78-10546

AUTOMATED INSPECTION OF WIRE-FRAME ASSEMBLIES

J. G. ETZEL and J. A. MUNFORD

Mar. 1979

GSFC-12321

Vol. 3, No. 4, p. 579

System improves accuracy of measurement between spaces of wire mesh and other wire frame assemblies while significantly reducing inspection time. Device operates automatically producing printout of measured spacings through use of optical scanner.

B78-10547

DETECTING SURFACE DEFORMATIONS PHOTOGRAPHICALLY

L. D. BECKERLE (Rockwell Intern. Corp.) and J. R. ROBSON (Rockwell Intern. Corp.)

Mar. 1979

MSC-16156

Vol. 3, No. 4, p. 580

Simple photographic technique detects cracks and changes as small as 0.08 mm in surface contours of opaque objects subjected to environmental and other tests.

B78-10548

COMPRESSION TESTING OF FLAMMABLE LIQUIDS

O. M. BRILES (Sundstrand Advanced Technology Operations) and R. P. HOLLENBAUGH (Sundstrand Advanced Technology Operations)

Mar. 1979

MSC-16121

Vol. 3, No. 4, p. 581

Small cylindrical test chamber determines catalytic effect of given container material on fuel that might contribute to accidental deflagration or detonation below expected temperature under adiabatic compression. Device is useful to producers and users of flammable liquids and to safety specialists.

B78-10549

ACOUSTIC-OPTICAL IMAGING WITHOUT IMMERSION

H. LIU (LUMIN INC.)

Mar. 1979

M-FS-23876

Vol. 3, No. 4, p. 582

System using membranous end wall of Bragg cell to separate test specimen from acoustic transmission medium, operates in real time and uses readily available optical components. System can be easily set up and maintained by people with little or no training in holography.

B78-10550

DETECTING MOISTURE IN COMPOSITE HONEYCOMB PANELS

J. D. CULP (McDonnell Douglas Corp.) and J. W. SAPP, JR. (McDonnell Douglas Corp.)

Mar. 1979

MSC-16750

Vol. 3, No. 4, p. 583

Radiographic inspection technique detects liquids trapped in cells of honeycomb composite panels constructed with porous fiber-reinforced plastic skins. Procedure is of use in industries such as aerospace or automotive engineering where honeycomb composites are being used or studied.

B78-10551

REFRIGERANT LEAK DETECTOR

E. J. BYRNE (Rockwell Intern. Corp.)

Mar. 1979

MSC-18214

Vol. 3, No. 4, p. 583

Quantitative leak detector visually demonstrates refrigerant loss from precision volume of large refrigeration system over established period of time from single test point. Mechanical unit is less costly than electronic 'sniffers' and is more reliable due to absence of electronic circuits that are susceptible to drift.

B78-10552

'GENTLE' HOLDER FOR BRITTLE CERAMICS

E. G. STEVENS (Rockwell Intern. Corp.)

Mar. 1979

MSC-19645

Vol. 3, No. 4, p. 585

Fixture uses commercially available flexible refractory fabric to gently hold brittle ceramic specimens for alignment during high temperature tests up to 2000 F and above. Assembly is held at both ends by water cooled straps that keep fabric/fixture bond area cold during tests.

B78-10553

POTENTIAL FLOWS IN PROPULSION SYSTEM INLETS

C. A. FARRELL, JR. and N. O. STOCKMAN

Mar. 1979

LEWIS-13010

Vol. 3, No. 4, p. 586

Collection of computer programs used to calculate compressible potential flow in arbitrary axisymmetric inlet at any combination of operating conditions of inlet mass-flow rate, free stream velocity, and incident angle proves useful in development of wide variety of propulsion system inlet designs.

B78-10554

ORBITAL HEAT RATE PACKAGE

J. K. LOVIN (Lockheed Missiles and Space Co.) and L. W. SPRADLEY (Lockheed Missiles and Space Co.)

Mar. 1979

M-FS-23980

Vol. 3, No. 4, p. 586

Package consisting of three separate programs used to accurately predict temperature distribution of spacecraft in planetary orbit is invaluable tool for design and analysis of other structures that must function in complex thermal environment.

B78-10555

TUMBLING-VEHICLE ENTRY HEATING

C. D. ENGEL (REMTECH, Inc.)

Mar. 1979

M-FS-23712

Vol. 3, No. 4, p. 587

Programs rapidly determines heating rate for any point on

vehicle at any angle of attack or roll position during reentry into earth's atmosphere. Package can be used to accurately find heating environment for numerous points on vehicle as function of time for thermal protection systems or structural breakup studies.

B78-10556
FLOW IN AXISYMMETRIC DUCTS WITH STRUTS
 O. L. ANDERSON (United Aircraft Corp.)
 Mar. 1979
LEWIS-12798 Vol. 3, No. 4, p. 588
 Program provides accurate analytical tool for development of optimum diffuser design for wide range of applications.

07 MACHINERY

B78-10098
RIGID COUPLING IS ALSO FLEXIBLE
 W. T. APPLEBERRY (Rockwell Intern. Corp.)
 Jun. 1978
MSC-16488 Vol. 3, No. 1, p. 105
 Spring-loaded coupling is rigid under light loads and swivels under higher loads. Break-out point can be set at any desired value by selecting appropriate preload springs. Coupling requires no cushions or elastomeric joints that limit temperature range.

B78-10099
COMPACT PRESSURE-LINE COUPLING
 J. W. GUEST (Rockwell Intern. Corp.)
 Jun. 1978
MSC-16893 Vol. 3, No. 1, p. 106
 Coupling saves space by using socket screws to compress gasket. Device can be installed in hard-to-reach locations.

B78-10100
PLASMA IGNITER FOR INTERNAL-COMBUSTION ENGINES
 R. R. BRESHEARS and D. J. FITZGERALD
 Jun. 1978
NPO-13828 Vol. 3, No. 1, p. 106
 Hot ionized gas (plasma) ignites air/fuel mixture in internal combustion engines more effectively than spark. Electromagnetic forces propel plasma into combustion zone. Combustion rate is not limited by flame-front speed.

B78-10101
SELF-CENTERING STEPPED PISTON
 I. ETSION and B. J. HAMROCK
 Jun. 1978 See also NASA TN-D-8345 (N77-11402)
LEWIS-12997 Vol. 3, No. 1, p. 108
 Device centers itself within cylinder, allowing minimum leakage past piston.

B78-10102
COMPACT PISTON-POSITION SENSOR
 M. O. DUSTIN
 Jun. 1978
LEWIS-12392 Vol. 3, No. 1, p. 109
 Strain gage measures position of spring-loaded piston without interfering with its motion.

B78-10103
MODIFIED PIPE EXTENSION SAFELY RELEASES CHAIN BINDERS
 D. W. HAW (Rockwell Intern. Corp.)
 Jun. 1978
MSC-16937 Vol. 3, No. 1, p. 110
 Pipe, cut partly in half lengthwise, and cupped and notched at one end, safely releases tension in chain binders that cinch

tiedown chains around truck loads. Device prevents binder-handle from being thrown violently during release.

B78-10104
MAGNETOSTRICTIVE VALVE
 C. C. CASABIANCA
 Jun. 1978
NPO-14235 Vol. 3, No. 1, p. 111
 Device requires no moving parts and has less stringent tolerances. Device uses magnetostrictive powdered metal and electromagnets, rather than solenoid. Device is more reliable than conventional valves.

B78-10105
BOOSTING THE POWER OF TWO-STAGE ENGINES
 J. HOUSEMAN
 Jun. 1978
NPO-14057 Vol. 3, No. 1, p. 112
 Low-pollution advantages are retained and power output increased if first stage operates on two-stroke cycle.

B78-10106
PRECISION FLUID-PRESSURE REGULATOR
 A. R. MCDOUGAL
 Jun. 1978
NPO-13370 Vol. 3, No. 1, p. 113
 Reshaping of metering orifice improves pressure control and stability. Slotted hollow pintle replaces poppet to increase linear motion required to obtain given pressure drop.

B78-10107
DESIGN OF TRANSMISSION SHAFTING
 S. H. LOEWENTHAL
 Jun. 1978 See also NASA TM-X-73639 (N77-20482)
LEWIS-12965 Vol. 3, No. 1, p. 114
 Formula considers flexure fatigue characteristics of shaft material under combined cyclic bending and static torsion stress. Formula permits selecting shaft sizes that meet common loading conditions without adding on excessive shaft material. Formula is applicable to design of rotary power or torque transmission shafting external to machine elements.

B78-10108
'NONFLOATING' UNIVERSAL JOINT
 W. T. APPLEBERRY (Rockwell Intern. Corp.)
 Jun. 1978
MSC-19546 Vol. 3, No. 1, p. 115
 Modified crowned-spline joint is lightweight, durable, and requires minimum of parts. It does not use rubber cushions to limit play and is useful over wide temperature range. It has inner ball and socket to provide rigid connection with no axial play. Joint can be adapted to form pinned connection between segmented torque tubes.

B78-10109
FLICKING-WIRE DRAG TENSIONER
 M. A. DASSELE (Sperry Rand Corp.) and H. FAIRALL (Sperry Rand Corp.)
 Jun. 1978
MSC-16367 Vol. 3, No. 1, p. 116
 Wire-drag system improves wire profile and applies consistent drag to wire. Wire drag is continuously adjustable from zero drag to tensile strength of wire. No-sag wire drag is easier to thread than former system and requires minimal downtime for cleaning and maintenance.

B78-10110
SIMPLE AIR-PISTON GAS-SAMPLING SYSTEM
 T. W. NYLAND
 Jun. 1978
LEWIS-12922 Vol. 3, No. 1, p. 117
 System traps contaminant-free samples without using mechanical pumps.

B78-10111
DUAL RELIEF-VALVE SYSTEM

07 MACHINERY

J. R. KARNs and W. R. LATTa
Jun. 1978

LANGLEY-12267 Vol. 3, No. 1, p. 118

System allows removal and recertification of pressure-relief valve without compromising safety requirements or depressurizing pressure vessels.

B78-10267
METER FOR VERY SLOW FLOWS

W. J. BAXTER, JR. (Orion Res. Inc.), M. S. FRANT (Orion Res. Inc.), and S. J. WEST (Orion Res. Inc.)
Oct. 1978 See also B78-10233

MSC-18112 Vol. 3, No. 2, p. 275

Solid-state sensing unit developed for use with NASA's Water-Quality Monitoring System can detect small velocity changes in slow moving fluid. Nonprotruding sensor is applicable to numerous other uses requiring sensitive measurement of slow flows.

B78-10268
WIND-WHEEL ELECTRIC POWER GENERATOR

J. W. KAUFMAN
Oct. 1978

M-FS-23515 Vol. 3, No. 2, p. 277

Windpowered electric generator mounted in protective housing unit has improved efficiency and reliability.

B78-10269
SUBMINIATURE HYDRAULIC ACTUATOR

F. D. SEVART (Boeing Co.)
Oct. 1978

LANGLEY-11522 Vol. 3, No. 2, p. 277

Subminiature, single-vane rotary actuator for wind-tunnel test-model control-surface actuation systems presents severe torque and system band-pass requirements with stringent space and weight limitations. Actuator has very low leakage of fluid from one side to other, permitting use in precision position servo-systems.

B78-10270
EMERGENCY ESCAPE DEVICE

J. L. BURCH
Oct. 1978

M-FS-23235 Vol. 3, No. 2, p. 278

Modified egress mechanism used to deploy Lunar Roving Vehicle, could be used in shipping, safety exits, amusement parks, and other applications to gently lower people or equipment several hundred feet.

B78-10271
ULTRASONIC EXTENSOMETER MEASURES BOLT PRE-LOAD

C. M. DANIELS, JR. (Rockwell Intern. Corp.)
Oct. 1978

M-FS-19337 Vol. 3, No. 2, p. 278

Extensometer using ultrasonic pulse reflections to measure elongations in tightened belts and studs is much more accurate than conventional torque wrenches in application of specified preload to bolts and other threaded fasteners.

B78-10272
AIRCRAFT TRAILING VORTEX HAZARD ALLEVIATORS

D. R. CROOM
Oct. 1978 See also NASA TN-D-8162 (N76-18041); NASA TN-D-8360 (N77-11968); NASA TN-D-8373 (N77-21404); NASA SP-409 (N78-12017)

LANGLEY-12034 Vol. 3, No. 2, p. 280

Wind-tunnel tests show that existing flight spoilers on large wide-body jet transport aircraft can be used to reduce vortex hazard for trailing aircraft.

B78-10273
COMPACT RATCHET WRENCH

E. J. STRINGER (Rockwell Intern. Corp.)
Oct. 1978

M-FS-24252 Vol. 3, No. 2, p. 281

Round ratchet wrench handle that fits into palm can be inserted into most areas that are inaccessible to wrenches with conventional handles.

B78-10274
WIDE-TEMPERATURE CORROSION-RESISTANT PRESSURE REGULATOR

H. WICHMANN (Marquardt Co.)
Oct. 1978

NPO-13776 Vol. 3, No. 2, p. 281

Simplified design and all-metal-and-ceramic-components make pressure regulator compatible with corrosive fluids such as fluorine and hydrazine, and extends operating-temperature range. Flexure guidance eliminates hysteresis and friction, and self-generated contaminations are diminished enough to produce nearly unlimited maintenance-free lifetime.

B78-10275
LOW-FREQUENCY VIBRATION ISOLATION

D. C. MILLER and D. H. OTTH
Oct. 1978

NPO-13915 Vol. 3, No. 2, p. 282

Viscoelastic shear dampers help eliminate microinch deflections resulting from low frequency vibrations. Dampers are applicable to control of tones and resonances in record players and turntables and other audio engineering equipment where vibration isolation is critical.

B78-10276
SIMPLER VALVE FOR RECIPROCATING ENGINES

J. W. AKKERMAN
Oct. 1978

MSC-16239 Vol. 3, No. 2, p. 283

Simpler design eliminating camshafts, cams, and mechanical springs should improve reliability of hydrazine powered reciprocating engines. Valve is expected to improve efficiency, and reduce weight of engines in range up to 50 horsepower.

B78-10277
DUAL-ACTION EXPANDED-LATCH MECHANISM

R. A. SPENCER (Martin Marietta Corp.), J. R. TEWELL (Martin Marietta Corp.), and W. H. TOBEY (Martin Marietta Corp.)
Oct. 1978

M-FS-23557 Vol. 3, No. 2, p. 285

Single drive actuator operates novel mechanism that expands, attaches to object, and withdraws to latch object firmly to another part. Packaging is extremely simple and compact, and eliminates need for machined parts or close tolerances.

B78-10278
A SHARP KNIFE FOR HIGH TEMPERATURES

R. M. HEISMAN (Rockwell Intern. Corp.) and W. F. ICELAND (Rockwell Intern. Corp.)
Oct. 1978

MSC-16932 Vol. 3, No. 2, p. 285

Electrically heated nickel-chrome-steel alloy knife may be used to cut heat resistant plastic felt and similar materials with relative ease. Blade made of commercially available alloy RA 330 retains edge at temperatures as high as 927 C.

B78-10279
ADHESIVE-REMOVAL TOOL

C. C. HAYNIE (Rockwell Intern. Corp.)
Oct. 1978

MSC-19498 Vol. 3, No. 2, p. 286

Air-driven hand-held tool with acrylic cutting blade removes adhesives and paint from surfaces. Sidewise-slicing motion of cutter eliminates tendency to 'bounce' on resilient materials.

B78-10280
COLLAPSIBLE MODULE EXTENDS TENFOLD IN HEIGHT

A. R. MCDUGAL
Oct. 1978

NPO-13371 Vol. 3, No. 2, p. 287

Low-cost hollow module rapidly converts into elevated platform for field applications. Module can be used as support

for communication antennas or for TV or movie cameras operated by news reporters. Alternatively, it can be used as extendible boom on vehicles.

B78-10281**THREE-PHASE INDUCTION MOTORS**

M. E. WOOD and N. A. DEMERDASH (Virginia Polytechnic Inst.)
Oct. 1978

MSC-16904**Vol. 3, No. 2, p. 288**

Program simulates performance characteristics of three-phase induction motors under normal conditions and extreme temperature, frequency, voltage magnitude, and voltage balance.

B78-10407**COUPLER FOR MOVING VEHICLES**

A. A. RUDMANN

Jan. 1979

GSFC-12322**Vol. 3, No. 3, p. 423**

Coupler for two moving vehicles gradually orients and retains target vehicle, avoiding any abrupt contact with parent vehicle. Mechanism gently releases captured vehicle with approximate speed and direction of parent vehicle. Coupler may be applicable to deployment and retrieval of oceanographic research equipment and vessels or coupling of aircraft in flight.

B78-10408**QUICK LOCKING/UNLOCKING RETAINER**

G. OKAMOTO (Rockwell Intern. Corp.) and B. B. WILLIAMS (Rockwell Intern. Corp.)

Jan. 1979

MSC-18048**Vol. 3, No. 3, p. 424**

Spring clip retainer may prove more convenient than clamps or wingnut and stud combination when holding two small parts together in test fixtures and other applications where parts must be frequently moved or changed.

B78-10409**ANTIBACKOFF LOCK FOR NUTS AND BOLTS**

J. M. FEALY

Jan. 1979

MSC-16472**Vol. 3, No. 3, p. 425**

Simple lock, designed for hydraulic system, is used to keep any nut or bolt in place under vibration.

B78-10410**DEVICE FOR PITCHING OFF METAL TUBES**

E. O. STENGARD

Jan. 1979

GSFC-12274**Vol. 3, No. 3, p. 426**

Toggle mechanism is used to trap gas samples within small diameter metal tubes. Device is easily actuated and seals off without fracture.

B78-10411**SPRING CONTROL OF WIRE HARNESS LOOPS**

P. J. CURCIO (Fairchild Republic Co.)

Jan. 1979

MSC-18246**Vol. 3, No. 3, p. 426**

Negator spring control guides wire harness between movable and fixed structure. It prevents electrical wire harness loop from jamming or being severed as wire moves in response to changes in position of aircraft rudder. Spring-loaded coiled cable controls wire loop regardless of rudder movement.

B78-10412**NONCONTACTING VALVE-POSITION INDICATOR**

E. A. CROVELLA (Carleton Controls Corp.), R. D. CUMMINS (Carleton Controls Corp.), and J. M. WADA (Rockwell Intern. Corp.)

Jan. 1979

MSC-16048**Vol. 3, No. 3, p. 427**

Position of sealed valve or other movable part is indicated without penetrating housing. Flux from magnets connected to stem of hydraulic valve penetrates pressure wall and is sensed by Hall-effect transducer outside wall. When valve closes, moving

stem and magnets, voltage from transducer decreases; thus, stem position is indicated without physical contact.

B78-10413**IMPROVED GAS THRUST BEARINGS**

W. J. ANDERSON and I. ETSION

Jan. 1979 See also NASA-TN-D-8279 (N76-29598); NASA-TN-D-8221 (N76-24588)

LEWIS-12569**Vol. 3, No. 3, p. 428**

Two variations of gas-lubricated thrust bearings extend substantially load-carrying range over existing gas bearings. Dual-Action Gas Thrust Bearing's load-carrying capacity is more than ninety percent greater than that of single-action bearing over range of compressibility numbers. Advantages of Cantilever-mounted Thrust Bearing are greater tolerance to dirt ingestion, good initial lift-off characteristics, and operational capability over wide temperature range.

B78-10414**QUICK-CONNECT THREADED ATTACHMENT JOINT**

M. H. LUCY, W. R. MESSICK, and P. VASQUEZ

Jan. 1979

LANGLEY-12232**Vol. 3, No. 3, p. 430**

Joint is self-aligning and tightens with only sixty-five degrees of rotation for quick connects and disconnects. Made of injection-molded plastics or cast or machined aluminum, joint can carry wires, tubes, liquids, or gases. When two parts of joint are brought together, their shapes align them. Small projections on male section and slots on female section further aid alignment; slight rotation of male form engages projections in slots. At this point, threads engage and male section is rotated until joint is fully engaged.

B78-10415**SIMULATOR FOR TRAINING REMOTE-MANIPULATOR OPERATORS**

D. H. ORR (McDonnell Douglas Corp.) and L. C. WARD (McDonnell Douglas Corp.)

Jan. 1979

MSC-14921**Vol. 3, No. 3, p. 431**

Six-degree-of-freedom simulator uses economical components. Reduction in complexity makes this or similar system cost-effective for training manipulator operators, such as those in industries handling nuclear wastes and hazardous chemicals.

B78-10416**SHAFT SPEED CONTROL**

A. G. FORD

Jan. 1979

NPO-14170**Vol. 3, No. 3, p. 432**

Simple mechanism controls rotation of heavy-duty shaft by mechanical comparison with rotation of small, precise, stepper motor. Mechanism can be used to limit winding and unwinding speeds of large spools and reels and to control speed of other rotating shafts. Setup incorporates reference shaft geared down from stepper motor and feedback shaft geared up from shaft to be controlled. Feedback and reference shafts are coupled with brake assembly inside stationary cylinder. When work shaft speeds up, brakes are activated automatically to slow it down.

B78-10417**STABLE HYDRAULIC PRESSURE REGULATOR**

H. GOLD

Jan. 1979 See also NASA-TM-X-73687 (N78-10415)

LEWIS-13058**Vol. 3, No. 3, p. 433**

Neither sensing line restrictors nor frictional dampers are required for stability. Analysis presents method by which stability margin, response, and droop magnitude can be incorporated during design of direct-acting hydraulic pressure regulators.

B78-10418**LATCHING SOLENOID FOR CRYOGENIC VALVES**

W. S. WANG (Consolidated Controls Corp.)

Jan. 1979

MSC-18106**Vol. 3, No. 3, p. 434**

Pull-in and Delatching Coils of cryogenic solenoid contain

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copper and low-resistance, low-temperature-coefficient alloy to limit current at low temperatures.

B78-10419

INSULATOR FOR CRYOGENIC JOINTS

E. L. HAWKINSON (Rockwell Intern. Corp.)

Jan. 1979

M-FS-19361

Vol. 3, No. 3, p. 435

Semirigid polyurethane foam is firm enough not to collapse yet soft enough not to crack in extreme cold. Silicone cover retards flames and glass-fabric reinforcement protects foam against accidental damage from tools during installation and maintenance.

B78-10420

LOW-LEAKAGE LOW-TEMPERATURE VALVE

W. S. WANG (Consolidated Controls Corp.)

Jan. 1979

MSC-18087

Vol. 3, No. 3, p. 435

Valve was originally designed to handle liquid nitrogen tetroxide and monomethyl hydrazine. It successfully survived leakage at temperature as low as minus 95.5 C. It seals tightly against cold fluids, even after thousands of opening-and-closing cycles.

B78-10421

HIGH-PRESSURE CRYOGENIC CYLINDER SEAL

M. E. BURR (Rockwell Intern. Corp.)

Jan. 1979

M-FS-19335

Vol. 3, No. 3, p. 436

Triangular-cross-section Teflon ring seals against cryogenic fluid at temperature where standard wedge of U-rings fail. Ring can be mounted in groove in either piston or bore.

B78-10422

VACUUM LEADTHROUGH FOR HYDROGEN MASER

D. A. NORRIS

Jan. 1979

NPO-14148

Vol. 3, No. 3, p. 437

Nonmagnetic leadthroughs are used in hydrogen maser for electrical interconnection into vacuum chamber. Seal uses uranium glass to form vacuum seal to tungsten rod. Epoxy resin seals glass-coated rod to aluminum body. Connector was subjected to temperature cycling between minus 65 degrees to 150 C, six to seven times over a sixteen hour period.

B78-10423

ELECTRIC AND HYBRID VEHICLES

Innovator not given (Electric and Hybrid Vehicle Project Office of Lewis Research Center) Jan. 1979 See also NASA-TM-73756 (N78-18988)

LEWIS-13077

Vol. 3, No. 3, p. 436

Report characterizes state-of-the-art electric and hybrid (combined electric and heat engine) vehicles. Performance data for representative number of these vehicles were obtained from track and dynamometer tests. User experience information was obtained from fleet operators and individual owners of electric vehicles. Data on performance and physical characteristics of large number of vehicles were obtained from manufacturers and available literature.

B78-10424

LINES, BELLOWES, FLEXIBLE HOSES, AND FILTERS

Innovator not given (Space Propulsion and Power Division of Lewis Research Center) Jan. 1979 See also NASA SP-8123 (N78-16089)

LEWIS-13077

Vol. 3, No. 3, p. 438

Monograph organizes and presents significant experience and knowledge accumulated by NASA in development and operational programs. It reviews and assesses current design practices and establishes guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort.

B78-10557

TWO-POSITION WAX-MOTOR ROTARY ACTUATOR

W. C. STANGE

Mar. 1979

GSFC-12521

Vol. 3, No. 4, p. 591

Two position rotary actuator rotates shaft by precisely 180 deg and rotates it back on command. Mechanism consumes 11 watts of power and functions over wide range of temperatures under high vacuum for long unattended periods. Light weight device may be used to flip magnetometer for calibration in magnetic field.

B78-10558

AUTOMATIC BYPASS VALVE

R. F. MAYO

Mar. 1979

LANGLEY-12063

Vol. 3, No. 4, p. 592

Modified pressure-regulator valve developed for arc powered wind tunnels allows automatic, accurate, and easily adjustable transfer of excess airflow.

B78-10559

LOW PARTIAL DISCHARGE VACUUM FEEDTHROUGH

J. W. BENHAM (General Electric Co.) and S. R. PECK (General Electric Co.)

Mar. 1979

GSFC-12347

Vol. 3, No. 4, p. 593

Relatively discharge free vacuum feedthrough uses silver-plated copper conductor jacketed by carbon filled silicon semiconductor to reduce concentrated electric fields and minimize occurrence of partial discharge.

B78-10560

ADJUSTABLE GAS-FLOW RESTRICTOR

J. J. BROWN (Rockwell Intern. Corp.) and A. CARNEVALLE (Rockwell Intern. Corp.)

Mar. 1979

MSC-19486

Vol. 3, No. 4, p. 594

Flow restrictor uses long narrow helical path between mating threads to effect simultaneous pressure and temperature reduction of flowing gases within short axial distance. Pressure drop can be adjusted simply by screwing or unscrewing threaded parts to increase or decrease flow path.

B78-10561

TRANSMITTING ROTARY MOTION AT AN ANGLE

W. T. APPLEBERRY (Rockwell Intern. Corp.)

Mar. 1979

MSC-19483

Vol. 3, No. 4, p. 594

Transmission consisting of corrugated metal tube that can bend along its axis can transmit torques in range of 100 to 1000 pound-inches at corner angles as great as 180 deg. Possible uses include submerged mechanisms and food processing machinery where sealed drive line without contaminating lubricants is required. -

B78-10562

COATING FOR HOT SLIDING SEALS

J. STOCK (Fairchild Industries, Inc.)

Mar. 1979

MSC-16529

Vol. 3, No. 4, p. 595

Heat resistant paint is effective surface coating for sliding seals that must operate at elevated temperatures. Economical paint is easy to apply, offers minimal friction, and improves reliability of seals.

B78-10563

DRAG-PUMP ROTATING FILTER

G. H. DAVIS (United Technologies, Inc.) and T. M. DOYLE (United Technologies, Inc.)

Mar. 1979

MSC-16180

Vol. 3, No. 4, p. 596

Rotating filter, incorporated in water separation section of fuel cell hydrogen pump separator, traps contaminants before they reach critical impeller/statorhousing interface.

B78-10564

COMPACT BYPASS-FLOW FILTER

W. G. SWIFT (Parker Hannifin Corp.) and J. M. ULANOVSKY (Parker Hannifin Corp.)
Mar. 1979

MSC-18311 Vol. 3, No. 4, p. 597
Annular filter consisting of stacked rings separates particulates from bypass fluid passing through it in radial direction without slowing down main flow across unimpeded flow of fluid through its center. Applications include fluidized bed reactors, equipment for catalyst operations, and water purification.

B78-10565
REDUCING STICKINESS OF ELASTOMER VALVE SEALS
T. V. BRASWELL (TRW, Inc.) and J. W. MARTIN (TRW, Inc.)
Mar. 1979

LANGLEY-11778 Vol. 3, No. 4, p. 597
Special boiling and drying process removes approximately one half of extractable hydrocarbon tail present in peroxide cured elastomer of valve seals.

B78-10566
METALLIC THERMAL SEAL
J. BELLAZIA (Rockwell Intern. Corp.) and J. O. KANE (Rockwell Intern. Corp.)
Mar. 1979

MSC-18135 Vol. 3, No. 4, p. 598
Thermal barrier, constructed of U-shaped metal strips and room temperature-vulcanized silicon rubber, prevents hot gas from escaping through gaps. In application metallic barrier could be used to prevent heat from escaping through gaps around door, windows, partitions, and similar structures.

B78-10567
DURABLE NONSLIP STAINLESS-STEEL DRIVEBELTS
H. BAHIMAN
Mar. 1979

GSFC-12276; GSFC-12289 Vol. 3, No. 4, p. 599
Two toothed stainless-steel drive belt retains its strength and flexibility in extreme heat or cold, intense radiation, or under high loading. Belt does not stretch or slip and is particularly suited to machinery for which replacement is difficult or impossible.

B78-10568
TWO (OR MORE) ROTARY OUTPUTS FROM ONE INPUT
W. T. APPLEBERRY (Rockwell Intern. Corp.)
Mar. 1979

MSC-19450 Vol. 3, No. 4, p. 600
Mechanical sequencing device produces cyclic rotations of two outputs from single cyclic rotary input. Device is useful in automatic assemble apparatus, in food-processing machinery, and as controller for sequentially operated valves.

B78-10569
LOCALIZED COOLING OF ELECTRONIC COMPONENTS
Innovator not given (Aerospace Div. of Honeywell, Inc.) Mar. 1979

LANGLEY-11955 Vol. 3, No. 4, p. 601
Board-mounted electronic components are cooled quickly and conveniently for troubleshooting with aid of device that produces cold jet of dry oxygen. It can cool nonflat and hard-to-reach components.

B78-10570
'BLIND' POSITION INDICATOR
R. C. CRUZAN (Rockwell Intern Corp.)
Mar. 1979

MSC-16972 Vol. 3, No. 4, p. 602
Position-indicating instrument helps operator align parts without seeing them. Device is useful in industrial operations where parts must be blind-positioned accurately.

B78-10571
FASTENER FOR THERMAL INSULATION BLANKETS
J. D. COLE (Rockwell Intern. Corp.) and M. L. MARKE (Rockwell Intern. Corp.)
Mar. 1979

MSC-18253 Vol. 3, No. 4, p. 603

Serrated-stem fastener, similar to those that hold wire harnesses, has been adapted to attach blankets to supporting structures. Easy installation and removal implemented.

B78-10572
COMBINED HINGE AND LATCH
W. T. APPLEBERRY (Rockwell Intern. Corp.)
Mar. 1979

MSC-19602 Vol. 3, No. 4, p. 604
In door mechanism, hinge and latch are combined in single four-part assembly. Latch eliminates need for protruding hook, and can be modified to lock door in ninety degree position.

B78-10573
GEAR-TOOTH FATIGUE-STRENGTH ESTIMATES
W. BRINKLEY (McDonnell Douglas Corp.)
Mar. 1979

MSC-18167 Vol. 3, No. 4, p. 605
Method helps to determine fatigue damage and safety margins for case-hardened gear teeth. It can help designers determine rapidly these important factors.

B78-10574
RIGID 'SLING' FOR TOPHEAVY LOADS
R. D. STEWART
Mar. 1979

GSFC-12359 Vol. 3, No. 4, p. 605
Easy-to-use gantry safely lifts topheavy loads. Gantry is designed for quick assembly and adjustment around payload.

B78-10575
BEND-ABSORBING CLAMP
J. R. ABBOTT (Rockwell Intern. Corp.) and B. VALENCIA, JR. (Rockwell Intern. Corp.)
Mar. 1979

MSC-16971 Vol. 3, No. 4, p. 606
Compact, inexpensive clamp for flexible cables or rigid tubes absorbs vibrations and other motion. It accommodates wide range of dimensions, and saves space by eliminating pigtails or bellows commonly used to absorb linear movement or vibrations

B78-10576
EXTENSION HANDLE FOR SPRAY CANS
W. G. LUCAS (Boeing Co.)
Mar. 1979

KSC-11083 Vol. 3, No. 4, p. 607
Tubing and trigger assembly directs aerosol spray into hard-to-reach areas.

B78-10577
SAFE, DURABLE SOIL SAMPLER
R. D. DURRANT (Lockheed Elec. Co.)
Mar. 1979

MSC-18171 Vol. 3, No. 4, p. 607
Soil sampling tool protects user from injury and resists effects of weather and hard use. Penetrometer has uses in construction, surveying, geological research and similar applications.

B78-10578
DYNAMIC BRAKING OF BIDIRECTIONAL MOTORS
P. F. DEXTER
Mar. 1979

ARC-11194 Vol. 3, No. 4, p. 608
Circuit controls switching of bidirectional motor with dynamic braking.

B78-10579
WRENCH FOR THIN-WALLED CYLINDERS
W. C. HEIER
Mar. 1979

LANGLEY-12286 Vol. 3, No. 4, p. 609
Torquing wrench holds thin-wall cylinders gently yet firmly. No wrenching flats, slots, or holes need to be added to cylinder.

B78-10580
STIRLING-ENGINE DESIGN MANUAL

08 FABRICATION TECHNOLOGY

W. R. MARTINI (Univ. of Washington)
Mar. 1979

LEWIS-13098 Vol. 3, No. 4, p. 610

Engine which offers high efficiency and low emissions is described. Fundamental operation, analytic tools for stimulation, design, evaluation, and optimization is offered.

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B78-10112

HIGH-TEMPERATURE BRAZING OF STAINLESS STEEL

C. S. BEUYUKIAN (Rockwell Intern. Corp.), R. M. HEISMAN (Rockwell Intern. Corp.), and M. J. MITCHELL (Rockwell Intern. Corp.)

Jun. 1978 See also B78-10115; B78-10114; B78-10113

MSC-19459 Vol. 3, No. 1, p. 121

Prevention of iron contamination of platens is eliminated by placing alumina/silica ceramic-fiber blankets between platens and carbon-steel plate. Carbon-steel plates provide rigidity and improve heat transfer.

B78-10113

FORM DIE AND GLIDE PLATES FOR VACUUM BRAZING

C. S. BEUYUKIAN (Rockwell Intern. Corp.) and M. J. MITCHELL (Rockwell Intern. Corp.)

Jun. 1978 See also B78-10115; B78-10114; B78-10112

MSC-16549 Vol. 3, No. 1, p. 122

Die for fabricating steel retorts is made from commercial plywood with steel facing. Smooth-finished glide plates prevent partial bonding of plates to stainless-steel parts.

B78-10114

INTERNAL GRID FOR RELEASE OF BRAZING RETORTS

C. S. BEUYUKIAN (Rockwell Intern. Corp.) and M. J. MITCHELL (Rockwell Intern. Corp.)

Jun. 1978 See also B78-10115; B78-10113; B78-10112

MSC-19472 Vol. 3, No. 1, p. 123

Wire grid permits retorts to be opened more quickly after brazing. Grid also aids purging and evacuation, better control of vacuum in part area, and reduces thermocouple damage.

B78-10115

VACUUM CONTROL FOR BRAZING STAINLESS STEEL

C. S. BEUYUKIAN (Rockwell Intern. Corp.) and M. J. MITCHELL (Rockwell Intern. Corp.)

Jun. 1978 See also B78-10114; B78-10113; B78-10112

MSC-19457 Vol. 3, No. 1, p. 124

System controls outgassing, thus reducing vaporization of braze-alloy and release-agent components, and improving braze quality.

B78-10116

PROCESS FABRICATES FLAT PANELS AT HIGH TEMPERATURES

C. S. BEUYUKIAN (Rockwell Intern. Corp.), R. M. HEISMAN (Rockwell Intern. Corp.), and M. J. MITCHELL (Rockwell Intern. Corp.)

Jun. 1978

MSC-16969 Vol. 3, No. 1, p. 125

Panel contours are precisely recorded on compression grid for compensating machine operations.

B78-10117

TWO BRAZE ALLOYS FOR THIN-WALL COMPONENTS

A. BRENNAN (Rockwell Intern. Corp.) and R. D. MCKOWN (Rockwell Intern. Corp.)

Jun. 1978

M-FS-19206 Vol. 3, No. 1, p. 126

Alloys are ductile and are not subject to hydrogen or cryogenic embrittlement. During brazing operation, alloys demonstrate

excellent wetting, flow and gap-filling capacities, and resist oxidation and salt-spray corrosion. Alloys are producible as foils, tape, wire, and powder. They may be used to join stainless steels and nickel and cobalt high-temperature alloys.

B78-10118

LASER WIRE STRIPPING

R. M. HEISMAN (Rockwell Intern. Corp.), W. F. ICELAND (Rockwell Intern. Corp.), A. R. KEIR (Rockwell Intern. Corp.), L. A. SMALL (Rockwell Intern. Corp.), and F. R. YEARIAN (Rockwell Intern. Corp.)

Jun. 1978 See also NASA SP-5107

MSC-18000 Vol. 3, No. 1, p. 126

Bench-mounted and hand-held laser units cut insulation from wires without nipping or scraping conductor. Process eliminates quality control problems and is fast, clean, precise, and repeatable.

B78-10119

CALCULATING WIRE-BUNDLE DIAMETER

E. J. STRINGER (Rockwell Intern. Corp.)

Jun. 1978

MSC-16378 Vol. 3, No. 1, p. 127

Outside diameters of wire bundles are calculated rapidly and accurately using table of empirical factors (bundle factors).

B78-10120

WIRE SELECTOR/CALCULATOR

J. R. FUHRMAN (Rockwell Intern. Corp.)

Jun. 1978

MSC-16632 Vol. 3, No. 1, p. 128

Circular device contains five scales that rotate in relation to fixed scale. Device is contained in folding booklike enclosure, giving step-by-step instructions and presenting useful tables.

B78-10121

BENCH-TOP SOLDERING AID FOR PC BOARDS

N. R. MANTON (Rockwell Intern. Corp.) and R. A. SCHROFF (Rockwell Intern. Corp.)

Jun. 1978

MSC-16274 Vol. 3, No. 1, p. 129

Multiple-board rack allows technician to insert components into several boards, flip them all in single motion, and then systematically solder leads on reverse side. Two adjustable crossbars allow boards of any size up to 10 by 24 inches. Operator can rotate racks and adjust angle of boards from standing or sitting position.

B78-10122

LASER BEAM ASSISTS IN PRECISION WELDING

V. R. TOLMEI (Rockwell Intern. Corp.)

Jun. 1978

M-FS-19319 Vol. 3, No. 1, p. 130

Laser beam aiming method eliminates trial-and-error beam alignment in electron-beam welding.

B78-10123

TOOL SIMPLIFIES WELD PREPARATION OF ALUMINUM

H. C. LARUE and E. L. SHROPSHIRE

Jun. 1978

MSC-16992 Vol. 3, No. 1, p. 130

Chisel fits into standard riveting gun. Device has V-shaped cutting end, allowing for easy penetration of material and removal of cuttings.

B78-10124

HIGH-VACUUM, LOW-TEMPERATURE BOND FOR SECOND-SURFACE MIRRORS

D. MCKEOWN (Faraday Labs., Inc.) and G. SONNENSCHNEIN (Faraday Labs., Inc.)

Jun. 1978

M-FS-23405 Vol. 3, No. 1, p. 131

Indium solder reliably bonds second-surface mirrors to radiant coolers in cryogenic environments.

B78-10125

INSPECTION OF ADHESIVE-BONDED RADIATORS

M. W. REED (Vought Missiles and Space Co.)
Jun. 1978

MSC-18062 Vol. 3, No. 1, p. 131

Adhesive-bond thickness in honeycomb-sandwich radiators is verified by visual inspection. Markoff on flow tubes created during curing process is directly related to adhesive thickness.

B78-10126

MATCH-MOLD PROCESS FOR FOAM INSULATION

H. E. RUMENAPP (Rockwell Intern. Corp.), G. G. LISKAY (Rockwell Intern. Corp.), and D. S. WANG (Rockwell Intern. Corp.)
Jun. 1978 See also B78-10128; B78-10127

MSC-16631 Vol. 3, No. 1, p. 132

Process, using fast-setting putty-type thixotropic epoxy material, eliminates need for leakproof enclosures. Method reduces cure time from 15 to 4 hours. Epoxy masters are stronger and do not require special coating for storage. Manufacturers of form-fitted insulation or packaging forms will find this process to be of interest.

B78-10127

VOID-FREE FOAM INSULATION

G. G. LISKAY (Rockwell Intern. Corp.) and D. S. WANG (Rockwell Intern. Corp.)

Jun. 1978 See also B78-10128; B78-10126

MSC-16805 Vol. 3, No. 1, p. 133

Sectional casting method uses blocking piece for first pour, which limits pour height to 12 inches.

B78-10128

HIGH-RISE FOAM-IN-PLACE PROCESS

G. G. LISKAY (Rockwell Intern. Corp.)

Jun. 1978 See also B78-10127; B78-10126

MSC-16931 Vol. 3, No. 1, p. 133

Large polyurethane parts are molded by sequential pouring without waiting for foam to cure. Joints between pours and tops of parts are free of voids and need no trimming.

B78-10129

RECLAIMING HYBRID INTEGRATED CIRCUITS

G. EBEL (Singer Co.) and H. GROSSBARD (Singer Co.)

Jun. 1978

MSC-16463 Vol. 3, No. 1, p. 135

Reclamation method consists of opening very small hole in package and shaking out trapped particles. Procedure is performed in dry box through which an inert gas is flowing to insure no room air enters package. Acoustic transducer monitors sound of vibrating particles. Amplifier produces audio and oscilloscope output. Hole is sealed with heated solder form.

B78-10130

BONDING KOVAR PINS TO AN ALUMINA SUBSTRATE

G. D. BENNETT (Simmonds Precision, Instrument Systems Division)

Jun. 1978

MSC-16828 Vol. 3, No. 1, p. 135

Assemblies for cryogenic applications are shockproof and vibrationproof.

B78-10131

'PC FABRICATION' FOR SILICON SOLAR-CELL ARRAYS

J. A. AMICK (RCA)

Jun. 1978

NPO-13991 Vol. 3, No. 1, p. 136

Batch bonding number of solar cells to preconfigured printed-wiring board is inexpensive and reduces assembly and setup time of multi-element solar cell power units.

B78-10132

CONTINUOUS PROCESS FABRICATES BATTERY PLAQUE

M. J. TURCHAN (Tyco Labs., Inc.)

Jun. 1978

GSFC-12054 Vol. 3, No. 1, p. 137

Fast coating/drying/sintering line produces high-quality nickel plaque for nickel-cadmium cells, having uniform, reproducible characteristics and carefully controlled thickness.

B78-10133

IMPROVED THERMAL-TILE BARRIER

D. H. CADE (Rockwell Intern. Corp.), R. N. SIDRIC (Rockwell Intern. Corp.), and M. SURBAT (Rockwell Intern. Corp.)

Jun. 1978

MSC-16929 Vol. 3, No. 1, p. 138

Improved filler design, laser processing to seal ceramic fibers, and device for sliding barrier into tile gap improves thermal tile.

B78-10134

TILE-BONDING TOOL

C. C. HAYNIE (Rockwell Intern. Corp.) and J. W. HOLT (Rockwell Intern. Corp.)

Jun. 1978

KSC-11053 Vol. 3, No. 1, p. 139

Device applies uniform, constant, precise pressure to hold tiles in place during bonding. Tool consists of pressure bladders supported by adjustable pole. Pole can accommodate single or multiple bladders. Tiles can be flat or contoured.

B78-10135

HIGH-TEMPERATURE WATERPROOFING FOR TILES

E. B. BAHNSEN (Lockheed Missiles and Space Co.) and Y. D. IZU (Lockheed Missiles and Space Co.)

Jun. 1978

MSC-16773 Vol. 3, No. 1, p. 140

Vapor-deposited coating protects silica tiles against water vapor up to 800 degrees Fahrenheit. Degradation products formed do not affect optical properties of coating. Application method makes it particularly suitable for fragile components.

B78-10136

SIMPLIFIED TOOLING FOR SPRAY MASKING

B. J. DINBAR (Rockwell Intern. Corp.) and R. E. HAMMONS (Rockwell Intern. Corp.)

Jun. 1978

MSC-16927 Vol. 3, No. 1, p. 140

Tooling technique involves positioning tiles within acrylic plastic masking frames that attach magnetically to holding fixture. Plastics are 'magnetized' with adhesive magnetic-rubber strips. Technique is simpler and less expensive than conventional methods. L-shaped masks are easily cut and altered.

B78-10137

LADLE FOR POURING HOT MELT

E. P. RUPPE (Rockwell Intern. Corp.) and K. TERAMURA (Rockwell Intern. Corp.)

Jun. 1978

MSC-16974 Vol. 3, No. 1, p. 141

Device has two weld-attached stubs that include guide plates. One stub accepts handle horizontally; other accepts it at an angle. Pinlock secures handle to stub.

B78-10138

'SPACE SLITTER' FOR FILM OR TAPE

W. H. JOHNSON (Boeing Co.)

Jun. 1978

KSC-10894 Vol. 3, No. 1, p. 142

Device cuts film or tape into strips by guiding film in channel under cutting blades. Device is operated by lifting pressure bar to insert blades into film. Film is then pulled through blades. Cutter has potential uses in advertising, commercial art, and publishing fields.

B78-10139

PORTABLE FLUORESCENT-DYE INSPECTION DEVICE

F. E. SUGG (Rockwell Intern. Corp.)

Jun. 1978

M-FS-24019 Vol. 3, No. 1, p. 143

Hand-held device blocks ambient light from inspection area and can be used to examine sections of large objects without requiring objects to be moved or placed in darkroom. Bellows-type flexible shield has foam ends that seal surface to be inspected. Ultraviolet lamp and magnifier mounted in bellows permit localization of light. Rigid eyeshield hood allows in situ inspection.

08 FABRICATION TECHNOLOGY

B78-10140

HANDBOOK FOR ESTIMATING FABRICATION COSTS

L. M. FREEMAN

Jun. 1978 See also NASA TM-X-73397 (N77-27248)

M-FS-23795

Vol. 3, No. 1, p. 144

Guide helps design engineers determine total cost of fabricating electronic equipment. It contains tables of 'factors' for determining costs associated with fabrication. 'Standards' section includes estimations of time required for procedures ranging from machining, to wiring, to printed-circuit board fabrication.

B78-10141

SCALE PARACHUTE FABRICATION

D. BACCHUS and D. HENKE (Goodyear Aerospace Corp.)

Jun. 1978 See also NASA CR-120719 (N76-18055)

M-FS-23139

Vol. 3, No. 1, p. 144

Report describes highlights in developing six 12.5-percent scale drogue parachute models. Deployment bags are fabricated for each model.

B78-10142

CMOS BULK-METAL DESIGN HANDBOOK

T. M. EDGE

Jun. 1978 See also NASA TM-78126 (N77-86193)

M-FS-23856

Vol. 3, No. 1, p. 145

User's guide describes techniques for generating precision mask artwork for complex CMOS integrated circuits, starting from logic diagram. Techniques are based on standard-cell approach. Guide also includes user guidelines for designing efficient CMOS arrays.

B78-10143

IMPROVED ELECTRON-BEAM WELDER

R. A. SMOCK, R. A. TAYLOR, and W. A. WALL

Jun. 1978 See also NASA TM-X-73390 (N77-23491)

M-FS-23772

Vol. 3, No. 1, p. 145

Report describes comprehensive test-and-evaluation program designed to improve performance of 7.5 kW electron-beam welder. Report describes prototype and seventeen changes incorporated to improve performance.

B78-10144

PNEUMATIC SERVOMECHANISMS

T. E. BAILEY (Martin Marietta Corp.) and G. M. JOSEPH (Martin Marietta Corp.)

Jun. 1978

M-FS-23295

Vol. 3, No. 1, p. 146

Dynamic analysis computer program analyzes pneumatic servomechanism and the system it controls. System and device to be modeled can contain up to twenty ullage chambers, twenty moving parts, and forty flow lines. Program is easily modified to model larger systems.

B78-10282

IMPROVED TRANSFORMER-WINDING METHOD

W. T. MCLYMAN

Oct. 1978 See also B78-10283

NPO-14243

Vol. 3, No. 2, p. 291

Proposed technique using special bobbin and fixture to wind copper wire directly on core eliminates need core cut prior to assembly. Application of technique could result in production of quieter core with increased permeability and no localized heating.

B78-10283

BONDING CORE MATING SURFACES IMPROVES TRANSFORMER

W. T. MCLYMAN

Oct. 1978 See also B78-10282

NPO-13855

Vol. 3, No. 2, p. 292

Modifications to assembly procedures for C-core transformers virtually eliminates changes in core end gaps due to temperature cycling during impregnation and potting stages, thus stabilizing magnetization properties of core.

B78-10284

FRICTION OF THICK LAMINATES

G. E. DICKERSON

Oct. 1978

LANGLEY-12010

Vol. 3, No. 2, p. 292

Technique which improves fiber alignment and reduces void content of thick laminated structures is readily applicable to structures that contain sections such as ribs, channels, or bosses joined to thin stems of same material.

B78-10285

VOID-FREE BENDS IN LAMINATED STRUCTURES

S. W. RICE (Vought Corp.), F. A. SCHWIND (Vought Corp.), and J. H. WILSON (Vought Corp.)

Oct. 1978

MSC-16998

Vol. 3, No. 2, p. 293

Layup technique involving repositioning of filler plies and redesigning of bleeder pressure pad reduces wrinkles, voids, pores, and other defects at sharp bends in laminated materials.

B78-10286

PROTECTIVE COATING FOR COPPER IN ALUMINUM HEAT EXCHANGERS

R. AVAZIAN (Rockwell Intern. Corp.)

Oct. 1978

M-FS-19334

Vol. 3, No. 2, p. 194

Application of ultrathin layer of molybdenum disulfide coating to copper tubing permits utilization of tubing in cast-aluminum heat exchangers. Coating prevents formation of copper/aluminum eutectic, but does not impede heat transfer.

B78-10287

HIGH-STRENGTH BLIND RIVET

L. R. JACKSON and A. H. TAYLOR (Vought Corp.)

Oct. 1978

LANGLEY-12154

Vol. 3, No. 2, p. 294

Method of upsetting blind head of rivets produces reliable, strong, pressure-tight fastenings.

B78-10288

SPECIAL WEAVE FOR INSULATING FABRICS

J. A. FRYE (Rockwell Intern. Corp.) and R. M. PUSCH (HITCO)

Oct. 1978

MSC-16380

Vol. 3, No. 2, p. 295

Special weave forms tight fabric for high-alumina-content alumina/boria/silica fibers, without leading to expensive filament fracture during weaving process. Resultant abrasion-resistant material is superior to conventional insulating materials at elevated temperatures.

B78-10289

INSTALLING FIBER INSULATION IN TIGHT SPACES

B. C. PATEL (Rockwell Intern. Corp.), D. S. WANG (Rockwell Intern. Corp.), and A. D. WARREN (Rockwell Intern. Corp.)

Oct. 1978

MSC-16934

Vol. 3, No. 2, p. 296

Two techniques using organic resin binders or thin clear-burning plastic film have been successfully used to simplify, and facilitate handling of aluminum/zirconia fiber batting as insulation material for high temperature seals.

B78-10290

VERIFYING THE FIT OF MATING CONTOURED SURFACES

W. D. LEONARD, P. G. SANDEFUR, JR., and L. E. WILKINSON

Oct. 1978

LANGLEY-11731

Vol. 3, No. 2, p. 297

Simple inexpensive process uses commercially available compressible film to verify fit between mating metal surfaces within 0.08 mm to 0.13 mm.

B78-10291

GENTLE SUPPORT STANDS FOR FLUID-LINE MOCKUPS

A. U. MILLET (Rockwell Intern. Corp.) and J. A. STEIN (Rockwell Intern. Corp.)

Oct. 1978

MSC-16479

Vol. 3, No. 2, p. 298

Screw clamp stand for fluid-line mockup support prevents distortion of tubing by color coded indicator lamps that acknowledge clamp contact.

B78-10292**MICROCIRCUIT-CLEANING MACHINE**

W. W. ROBINSON (Sperry Rand Corp.) and J. C. WILLIAMSON (Sperry Rand Corp.)

Oct. 1978

MSC-16060

Vol. 3, No. 2, p. 299

Circuit shaker removes loose particles from hybrid microcircuit packages. Machine can reduce rejections from particle impact noise determination (PIND) tests to less than 7 percent. Shaker is easily constructed and could be manufactured for distribution as kit.

B78-10293**SLURRY-POWDER SINTERING FURNACE**

J. BENE, J. F. JANSEN (Heliotech Corp.), and H. N. SEIGER (Heliotech Corp.)

Oct. 1978

LANGLEY-11423; LANGLEY-11426

Vol. 3, No. 2, p. 300

Furnace design and filler material allow uniform sintered nickel plaque to be manufactured reliably.

B78-10425**HIGH-GRADIENT CONTINUOUS-CASTING FURNACE**

C. M. SCHEUERMANN, M. C. FLEMINGS (MIT), M. A. NEFF (MIT), B. A. RICKINSON (MIT), and K. P. YOUNG (MIT)

Jan. 1979

LEWIS-12934

Vol. 3, No. 3, p. 441

High gradient allows rapid growth rates in directionally-solidified eutectic alloys. Furnace design permits cost reductions in directional solidification process through its increased solidification rates, which reduces melt/mold interaction. It produces structural engineering materials for any application requiring properties directionally-solidified eutectic materials.

B78-10426**LATTICE PANELS WITH HIGH STRUCTURAL EFFICIENCY**

M. M. MIKULAS, JR. and M. D. RHODES

Jan. 1979 See also NASA-TM-X-72771 (N75-32160)

LANGLEY-11898

Vol. 3, No. 3, p. 442

By orienting strips for maximum strength, composite lattice panel is nearly as strong as 'conventional' composite panels. They can be custom-tailored for various applications and also be useful in moderately loaded structures.

B78-10427**LOW-COST GRAPHITE/EPOXY STRUCTURAL PANELS**

J. R. LAGER (Martin Marietta Corp.), D. PADILLA (Martin Marietta Corp.), W. F. THIEMET (Martin Marietta Corp.), and D. A. THOMAS (Martin Marietta Corp.)

Jan. 1979

M-FS-23871

Vol. 3, No. 3, p. 443

Manufacturing process precures components of composite panels prior to assembly. Process separately cures the graphite/epoxy skin, stiffener ribs, and stiffener grid. After curing, panels are assembled using special adhesive. With implementation of cost effective manufacturing techniques, uses of graphite-epoxy laminate panels may be found in other areas such as auto industry.

B78-10428**WELDING FIXTURE FOR THIN METAL PARTS**

S. R. MCCLURE

Jan. 1979

GSFC-12318

Vol. 3, No. 3, p. 444

Approach of supporting entire part contour and applying uniform pressure to joints is useful in fabricating other lightweight metal structures. Fixture has three essential components: spring-finger collet that applies pressure to joint, compressing device for tightening collet, and mandrel that supports parts. Besides preserving contour of parts, mandrel also functions as heat sink.

B78-10429**HOLDING FIXTURE FOR VARIABLE-CONTOUR PARTS**

C. C. HAYNIE (Rockwell Intern. Corp.), P. N. PACKER (Rockwell Intern. Corp.), and P. P. ZEBUS (Rockwell Intern. Corp.)

Jan. 1979

MSC-16270

Vol. 3, No. 3, p. 445

Array of vacuum cups on spindles holds parts for safe machining and other processings. Variable-contour part resting on fixture is held firmly enough for machining, coating, or other mechanical treatment.

B78-10430**CONTROL OF DIELECTRIC FILM DEPOSITION**

E. C. GRAEBNER and T. J. RILEY

Jan. 1979

LEWIS-13092

Vol. 3, No. 3, p. 446

Airgap capacitor in deposition chamber is used to monitor deposition. Coating process is completely uniform over edges, points, and internal areas. Areas not requiring coating can be marked. Since deposition process is accomplished at or near room temperature, there is no risk of thermal damage to coated components. With control method, deposition material is fully utilized and no excess coating is necessary to insure protection of coated parts.

B78-10431**REPAIRING PIN-FIN COLD PLATES**

E. P. RUPPE (Rockwell Intern. Corp.)

Jan. 1979

MSC-16424

Vol. 3, No. 3, p. 447

Inexpensive technique avoids high temperatures that deform thin stainless steel plates. Because repair disks have small diameters, repaired area can sustain greater loads than larger unsupported areas of faceplate.

B78-10432**RIVETING-FORCE GAGE**

J. W. ROTTA, JR.

Jan. 1979

NPO-13477

Vol. 3, No. 3, p. 448

Gage monitors riveting forces applied when components are mounted on printed-circuit boards. Correct swaging pressures have been established for specific substrate materials such as phenolics and ceramics.

B78-10433**REDUCING WELD PEAKING IN ALUMINUM**

E. BAYLESS, R. POORMAN, and J. SEXTON

Jan. 1979 See also NASA-TM-78176 (N78-25427)

M-FS-23973

Vol. 3, No. 3, p. 448

Excessive weld peaking can be corrected in heavy aluminum structures according to procedure. When peaking varies along weld joint, weld energy must be varied to compensate for nonuniformity.

B78-10434**PROCESS FOR GROWING THIN POLISHED SILICON SHEETS**

C. C. RADICS

Jan. 1979

NPO-14172

Vol. 3, No. 3, p. 449

Single-crystal sheets pulled from polten silicon floating on refractory melt require no slicing or polishing. Possible materials are chlorides and fluorides of barium, calcium, and strontium. Refractory melt may be able to absorb impurities from silicon and thus obviate postgrowth purification.

B78-10435**NO-WARP POTTED CIRCUITS**

W. W. ROBINSON (Rockwell Intern. Corp.)

Jan. 1979

MSC-19729

Vol. 3, No. 3, p. 450

Sponge inserts compensate for potting-compound expansion and relieve thermal stresses on circuit boards. Technique quality of production runs on PC boards intended for applications in environments less severe than those for aerospace equipment.

08 FABRICATION TECHNOLOGY

Pads reduce weight of modules because they weigh far less than potting compound they displace.

B78-10436 **FASTENER FOR THIN FRAGILE MATERIALS**

S. SOKOL (Rockwell Intern. Corp.)

Jan. 1979

MSC-18097 Vol. 3, No. 3, p. 451

Two-piece fastener is ideal for securing thin delicate parts that might be damaged by conventional fasteners, such as rivets or upset collars. Strength of new fastener approaches that of riveted connection. Easily fabricated, fastener consists of plastic button and spring-steel collar. Parts have large contact area to distribute loads on delicate assemblies and low profile so that they fit into narrow spaces. Fastener is suitable for materials ranging in density from sheet metal to fabric sandwiches.

B78-10437 **CERAMIC-TO-METAL VACUUM SEAL**

O. H. SACKERLOTZKY (Weston Instruments, Inc.)

Jan. 1979

NPO-13803 Vol. 3, No. 3, p. 452

Knife-edge sealing technique forms reliable, vacuum-tight bonds between materials having very different thermal-expansion characteristics. Seal is thin and flexible and absorb shear, hoop, and bonding stresses at joint so that seal remains vacuum tight.

B78-10438 **IMPROVED METHOD OF SOLAR-CELL ASSEMBLY**

J. D. BRODER, A. F. FORESTIERI, and J. MANDELKORN

Jan. 1979 See also NASA-TM-X-52875 (N70-41903); NASA-TM-X-73674 (N77-26615); NASA-TM-X-73655 (N77-22610)

LEWIS-12729 Vol. 3, No. 3, p. 452

Method bonds solar-cell modules between rigid or flexible base and plastic protective cover. Method relies on using one of several commercially-available, transparent, silicone adhesives as bonding agent. Should it ever be necessary to repair or replace some part of assembly, it may be possible to remove cover without destroying package since adhesive remains flexible.

B78-10439 **CIRCUIT-LEAD TRIMMING TEMPLATE**

K. OFARRELL (Sperry Rand Corp.) and E. WINN (Sperry Rand Corp.)

Jan. 1979

MSC-16589 Vol. 3, No. 3, p. 453

Template for use in trimming leads on production wiring boards is low-cost means for eliminating rejections for short leads and improving lead-strength uniformity. Template is simply unclad piece of printed-circuit board material that is drilled using same drill control tape used in making original production board. Revisions in component layout of board can therefore be made simultaneously in template.

B78-10440 **BREATHER CLOTH FOR VACUUM CURING**

M. W. REED (Vought Corp.)

Jan. 1979

MSC-18063 Vol. 3, No. 3, p. 454

Finely-woven nylon cloth that has been treated with Teflon improves vacuum adhesive bonding of coatings to substrates. Cloth is placed over coating; entire assembly, including substrate, coating, and cloth, is placed in plastic vacuum bag for curing. Cloth allows coating to 'breathe' when bag is evacuated. Applications include bonding film coatings to solar concentrators and collectors.

B78-10441 **PROCESSING HIGH-STRENGTH STEEL ALLOYS**

L. E. MCKNIGHT (Bertea Corp.)

Jan. 1979

MSC-16172 Vol. 3, No. 3, p. 454

Four-part report describes processing procedures for high-strength alloy steel suitable for use in pistons, piston rods, cylinder barrels, and other critical applications.

B78-10581 **CONTROLLING THE GROWTH OF SILICON SHEETS**

T. F. CISZEK (IBM Corp.)

Mar. 1979

NPO-14295 Vol. 3, No. 4, p. 613

Automated systems regulates sheet width, thickness, and composition. Deviations from preset brightness levels create error signals that alter gas flow, crystal-pulling speed, and melt temperature to produce uniform single-crystal sheets.

B78-10582 **AUTOMATED CONTROL OF CRYSTAL GROWTH**

A. HATCH (Mobile Tyco Solar Energy Corp.) and D. YATES (Mobile Tyco Solar Energy Corp.)

Mar. 1979

NPO-14420 Vol. 3, No. 4, p. 614

Optical sensors detect liquid/crystal-interface growth parameters. Technique enables automation by using cold-cathode-discharge sensors and linear imaging devices to determine process status and direct growth process.

B78-10583 **APPLYING UNIFORM ADHESIVE COATINGS**

D. S. WANG (Rockwell Intern. Corp.)

Mar. 1979

MSC-19462 Vol. 3, No. 4, p. 615

Removable overlay keeps thickness variations small, saving material and application time. In comparative tests against roller, brush, and spray application, thickness variations in the conventional techniques were at least three times greater.

B78-10584 **ELECTROPLATED 'COLD PATCH' FOR CRITICAL PARTS**

H. A. TRIPP (Rockwell Intern. Corp.)

Mar. 1979

M-FS-19401 Vol. 3, No. 4, p. 616

Cracks in metal parts are filled by electrodeposition in plating tank that conforms to part to be repaired. Principle is applicable to repair of cracks in components of chemical reactors and other critical structures.

B78-10585 **ACCELERATED HYBRID-CIRCUIT PRODUCTION**

J. E. BERG (Sperry Rand Corp.) and M. A. DASSELE (Sperry Rand Corp.)

Mar. 1979

MSC-18272 Vol. 3, No. 4, p. 617

Modified die-bonding machine speeds up hybrid-circuit production. Utilizing two pedestals, one for die tray and another for substrate tray, increased production and decreased error-margin are possible.

B78-10586 **DETECTING OVERPENETRATION OF ELECTRON-BEAM WELDS**

D. I. MACFARLANE (Rockwell Intern. Corp.) and F. D. YOUNG (Rockwell Intern. Corp.)

Mar. 1979

M-FS-19396 Vol. 3, No. 4, p. 618

Gold plate beneath weldment reveals areas of excess penetration during X-ray inspection. Technique is applicable to critical electron-beam welds, such as those in gas turbines and pressure vessels.

B78-10587 **BRAZING DISSIMILAR ALUMINUM ALLOYS**

H. DALALIAN (Singer Co.)

Mar. 1979

MSC-16340 Vol. 3, No. 4, p. 619

Dip-brazing process joins aluminum castings to aluminum sheet made from different aluminum alloy. Process includes careful cleaning, surface preparation, and temperature control. It causes minimum distortion of parts.

B78-10588 **CONTOURING PILE-BRUSH SEALS**

L. B. NORWOOD (Rockwell Intern. Corp.)

Mar. 1979

MSC-16231

Vol. 3, No. 4, p. 588

Variety of shapes are produced by simple flat machining. Freeze-cut method is cost-efficient by eliminating necessity to cut brushes individually.

B78-10589

EASILY INSTALLED INSULATION FOR STEAMFITTINGS

G. OWENS and J. E. POUZAR

Mar. 1979

MSC-18277

Vol. 3, No. 4, p. 620

Insulating blanket trimmed by hook-and-loop fasteners adds safety and prevents heat loss. For maintenance or adjustments, borders are quickly unfastened and fabric slipped off.

B78-10590

ALL-ION-IMPLANTATION PROCESS FOR INTEGRATED CIRCUITS

D. S. WOO (RCA Corp.)

Mar. 1979

M-FS-23995

Vol. 3, No. 4, p. 621

Simpler than diffusion fabrication, ion bombardment produces complementary-metal-oxide-semiconductor / silicon-on-sapphire (CMOS/SOS) circuits that are one-third faster. Ion implantation simplifies the integrated circuit fabrication procedure and produces circuits with uniform characteristics.

B78-10591

PREPARING THIN ALUMINUM FILMS FOR ADHESIVE BONDING

T. SMITH (Rockwell Intern. Corp.)

Mar. 1979

NPO-14357

Vol. 3, No. 4, p. 621

Carbonate pretreatment produces highly bondable surface without harming film. Treatment is useful in developing low-cost mirrors and solar concentrators fabricated from metal-coated plastic films. Treatment should cost no more than standard degreasing and rinsing procedures.

B78-10592

SEALING MICROCIRCUITS WITH ADHESIVES

J. J. LICARI (Rockwell Intern. Corp.) and K. L. PERKINS (Rockwell Intern. Corp.)

Mar. 1979 See also NASA-CR-150420 (N77-33349)

M-FS-23869

Vol. 3, No. 4, p. 622

Report describes study of adhesive-sealed packages for hybrid microcircuits. Ten commercially available adhesives were used to seal metal and ceramic packages and were tested for moisture resistance at high humidity.

09 MATHEMATICS AND INFORMATION SCIENCES

B78-10145

VERIFICATION OF REDUNDANCY MANAGEMENT DESIGN

H. C. GELDERLOOS (Honeywell, Inc.) and D. V. WILSON (Honeywell, Inc.)

Jun. 1978

MSC-16713

Vol. 3, No. 1, p. 149

Statistical method checks designs by simulating system operating conditions and adding error factors. Method has potential applicability to commercial and industrial situations where redundancy management system is used to detect and isolate failed components.

B78-10146

MODEL FOR REDUNDANT-SENSOR SIGNAL ERRORS

D. J. SOWADA (Honeywell, Inc.)

Jun. 1978

MSC-16715

Vol. 3, No. 1, p. 149

Report describes application of order statistics to analysis of failure modes in redundant systems. Report provides detailed mathematical discussion of approach, accompanied by graphs and equations. Techniques are relevant to process that demand high reliability, such as manufacture of dangerous chemicals. It also includes discussion of quad-redundant system.

B78-10147

BODY-FITTED COORDINATES SYSTEMS TRANSFORMATIONS

C. W. MASTIN (Mississippi State Univ.), F. C. THAMES (Mississippi State Univ.), and J. F. THOMPSON (Mississippi State Univ.)

Jun. 1978

LANGLEY-12307

Vol. 3, No. 1, p. 150

Two computer programs generate two-dimensional body-fitted coordinate systems and coordinate transformation. Programs are useful in fields requiring accurate numerical representation of boundary conditions and accurate numerical solutions of partial differential equations.

B78-10294

DETECTING AND CORRECTING BIT ERRORS ON MAGNETIC TAPE

M. PERLMAN

Oct. 1978

NPO-13842

Vol. 3, No. 2, p. 303

Procedure detects and corrects errors in data held for long term storage on magnetic tape.

B78-10295

FABRICATION OF SEA-FLOOR MODELS

G. L. HALE, C. E. LEVOE, and R. E. RENNER

Oct. 1978

NPO-13554

Vol. 3, No. 2, p. 303

Sea-floor models are fabricated simply and inexpensively by utilizing milling machine programmed with data tapes from ocean sounding surveys, and cement vermiculite mixture.

B78-10296

MARSHALL SYSTEM FOR AEROSPACE SIMULATION

H. H. TRAUBOTH, T. L. BALENTINE (Computer Sci. Corp.), W. L. MCCOLLUM (Computer Sci. Corp.), R. SEVIGNY (Computer Sci. Corp.), and A. J. VENTRE

Oct. 1978

M-FS-22672

Vol. 3, No. 2, p. 305

Software system allow facilitates quick and relatively easy simulations of physical systems on digital computers. Language is simple and flexible, and can be used by people who have little or no familiarity with computer programming.

B78-10442

PROCESSING MULTISPECTRAL SIGNALS FROM A DISCRETE-SENSOR ARRAY

J. B. WELLMAN

Jan. 1979

NPO-14211

Vol. 3, No. 3, p. 457

Technique encoding and decoding color-image signals from array of discrete sensors can simplify fabrication of remote-sensing imaging system. Imaging system projects output on charge-coupled-device array. Computerized matrix decoding scheme decodes image.

B78-10443

ALGORITHMS FOR LINEAR-SYSTEMS CONTROL

E. S. ARMSTRONG

Jan. 1979

LANGLEY-12313

Vol. 3, No. 3, p. 458

Control-theory design package aids design of linear-quadratic-Gaussian (LOG) controllers and optimal filters. It is applicable to systems that can be modeled by linear time-invariant differential or difference equations.

B78-10444

MULTIPURPOSE SYSTEM SIMULATOR

09 MATHEMATICS AND INFORMATION SCIENCES

C. A. PACKARD

Jan. 1979

GSFC-12333

Vol. 3, No. 3, p. 459

Multipurpose System Simulator (MPSS) evaluates relative performance of competitive computer systems and isolates areas for enhancement in existing or proposed systems. Model can simulate multiple central-processing-unit (CPU) interactive systems.

B78-10445

PLOTTING SHEAR-FLOW FORCES

T. FURUIKE and J. C. LONG

Jan. 1979

MSC-18013

Vol. 3, No. 3, p. 459

Structural analysts can use computer program to study shear-flow and in-plane forces characteristic of quadrilateral panels subjected to different loading conditions. Digital outputs are presented for engineers and management, with various options to allow bulk of data to be analyzed quickly.

B78-10446

SPARES-OPTIMIZED MODEL

A. W. CAIN (Rockwell Intern. Corp.) and R. E. PAULIN (Rockwell Intern. Corp.)

Jan. 1979

MSC-18015

Vol. 3, No. 3, p. 459

Computerized spares optimization for Space Shuttle Project comprises analytical process for developing spares quantification and budget forecasts. Model, which assesses risk associated with recommended spares quantities, is economical way to determine best mix of large number of spare types.

B78-10447

A PARAMETER-ESTIMATION SUBROUTINE PACKAGE

G. BIERMAN and M. W. NEAD

Jan. 1979

NPO-14263

Vol. 3, No. 3, p. 460

Estimation subroutine package comprises fast, efficient, and simple least-squares data-processing algorithms for use in orbit determination and related analyses. Very reliable and general algorithms have been documented. Package contains collection of streamlined subroutines that can be used to solve large variety of parameter-estimation and filtering problems. Special routines are included for problems with colored process noise and covariance (factor) mapping.

B78-10593

COMPUTATION OF SPARE PARTS REQUIREMENTS

M. A. MEZZACAPPA (Rockwell Intern. Corp.)

Mar. 1979

MSC-16872

Vol. 3, No. 4, p. 625

Statistical analysis determines probability of failure for N-1 spares. Analysis can help reduce downtime in industrial processes by determining number of spare parts that must be stockpiled. Analysis can also be inverted to decide if number of spares on hand is sufficient for lifetime needs of system.

B78-10594

RESIZING ALGORITHM FOR LOADED STRUCTURES

H. M. ADELMAN and R. NARAYANASWAMI (ODU Res. Foundation)

Mar. 1979 See also NASA-TM-X-72816 (N76-18530)

LANGLEY-12064

Vol. 3, No. 4, p. 625

Algorithm for resizing structural members subjected to combined thermal and mechanical loading is discussed.

B78-10595

PREDICTING CROP PRODUCTION FROM SATELLITE DATA

J. E. COLWELL (Environmental Res. Inst. of Mich.), R. F. NALEPKA (Environmental Res. Inst. of Mich.), and D. T. RICE

Mar. 1979

GSFC-12379

Vol. 3, No. 4, p. 626

Crop area and yield for winter wheat is found by analysis of LANDSAT pictures. Correlation between measure and yield is established from measurements on known wheatfields with known yields.

B78-10596

REPRESENTATION OF MULTIVALUED LOGIC FUNCTIONS

B. BENJAUTHRIT and I. S. REED (Southern California Univ.)

Mar. 1979

NPO-13760

Vol. 3, No. 4, p. 627

Systematic method for representing multivariate finite Galois field functions can simplify synthesis of multivalued logic elements.

B78-10597

PLOTTING MAX/MIN DATA ENVELOPES

T. FURUIKE (Rockwell Intern. Corp.) and J. C. LONG (Rockwell Intern. Corp.)

Mar. 1979

MSC-18016

Vol. 3, No. 4, p. 627

Study of maximum and minimum load distributions along structural section is aided by visual display of load distribution data. Maximum/minimum envelope plot program plots these envelopes of the stresses and shear loads at selected points in beam modeled by series of finite elements. Digital output for engineers and management is presented for quick analysis and understanding.

B78-10598

GRAPHICS PROGRAM FOR CHARTS

R. C. HENDRICKS and R. J. TRIVISONNO

Mar. 1979

LEWIS-12811

Vol. 3, No. 4, p. 628

GASLOT program is reliable, economical, and easy-to-use method of producing variety of thermophysical-property charts.

B78-10599

PRICE AND COST ESTIMATION

R. D. STEWART

Mar. 1979

M-FS-23812

Vol. 3, No. 4, p. 628

Price and Cost Estimating Program (PACE II) was developed to prepare man-hour and material cost estimates. Versatile and flexible tool significantly reduces computation time and errors and reduces typing and reproduction time involved in preparation of cost estimates.

B78-10600

PROCESSOR FOR THE UNIVAC 1100 SERIES

F. H. BRACHER, R. E. HOLZMAN, D. I. LEWIS, and R. C. TAUSWORTHE

Mar. 1979

NPO-13469

Vol. 3, No. 4, p. 629

MBASIC, advanced version of BASIC, is high-level interactive computer language designed to minimize time required for user to program task for computer execution. Language usually results in shorter and simpler programs that are easier to write and understand.

B78-10601

POSTPROCESSING CLASSIFICATION IMAGES

E. P. KAN (Lockheed Elec. Co. Inc.)

Mar. 1979

MSC-18238

Vol. 3, No. 4, p. 629

Program cleans up remote-sensing maps. It can be used with existing image-processing software. Remapped images closely resemble familiar resource information maps and can replace or supplement classification images not postprocessed by this program.

Subject Index

The title of each Tech Brief is listed under several selected subject headings to provide the user with a variety of approaches in his search for specific information. The Tech Brief number, e.g., B78-10240, is located under and to the right of the title and is followed by a two-digit number, e.g., 05, which designates the subject category in which the entire entry can be found.

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 NPO-14247 B78-10531 05
 Self-propelling, self-locating colonoscope
 NPO-14092 B78-10532 05

BIOLUMINESCENCE
 Chemiluminescence and bioluminescence microbe detection
 MSC-16779 B78-10237 05

BIOMEDICAL DATA

Portable data system
ARC-11136 878-10316 02
Microprocessor-based cardiopulmonary
monitor
MSC-18235 878-10369 05

BIOSYNTHESIS

Boosting production yield of biomedical
peptides
NPO-14142 878-10240 05

BIOTELEMETRY

Wideband EMG telemetry system
ARC-11209 878-10375 05
Self-propelling,
colonoscope self-locating
NPO-14092 878-10532 05

BIREFRINGENCE

Improved optical filter
GSFC-12225 878-10027 03

BIT SYNCHRONIZATION

Bit-synchronizer lock detector
MSC-16744 878-10164 02

BITS

Detecting and correcting bit errors on
magnetic tape
NPO-13842 878-10294 09
28-Bit serial word simulator/monitor
MSC-16418 878-10315 02

BLADES (CUTTERS)

'Space slitter' for film or tape
KSC-10894 878-10138 08
A sharp knife for high temperatures
MSC-16932 878-10278 07

BLOCK DIAGRAMS

Marshall system for aerospace
simulation
M-FS-22672 878-10296 09

BLOOD

Automated chromosome analysis
NPO-13913 878-10364 05
Automated electrophoresis apparatus
M-FS-23983 878-10516 04

BLOOD FLOW

Dip-molded t-shaped cannula
NPO-14073 878-10062 05
In vivo blood-flow mapping
NPO-14133 878-10244 05

BLOOD PRESSURE

Hand-held vital-signals monitor
MSC-18232 878-10524 05

BLOOD VESSELS

A probe for blood-vessel and spinal
interiors
NPO-14132 878-10242 05
In vivo blood-flow mapping
NPO-14133 878-10244 05

BOARDS (PAPER)

'Space slitter' for film or tape
KSC-10894 878-10138 08

BODY FLUIDS

Sweat collection capsule
ARC-11031 878-10367 05

BODY MEASUREMENT (BIOLOGY)

Remotely-powered intracranial pressure
monitor
ARC-11120 878-10362 05
Microprocessor-based cardiopulmonary
monitor
MSC-18235 878-10369 05
Hybrid respiration-signal conditioner
MSC-18226 878-10527 05

BODY TEMPERATURE

Hand-held vital-signals monitor
MSC-18232 878-10524 05
Hybrid temperature-monitoring circuit
MSC-18231 878-10525 05

BOILERS

Energy conversion alternatives study
LEWIS-13096 878-10330 03

BOLTS

Ultrasonic extensometer measures bolt
preload
M-FS-19337 878-10271 07
Antibackoff lock for nuts and bolts
MSC-16472 878-10409 07

BONDING

Flicking-wire drag tensioner
MSC-16367 878-10109 07
Form die and glide plates for vacuum
brazing
MSC-16549 878-10113 08
High-vacuum, low-temperature bond for
second-surface mirrors
M-FS-23405 878-10124 08
Bonding Kovar pins to an alumina
substrate
MSC-16828 878-10130 08
'PC fabrication' for silicon solar-cell
arrays
NPO-13991 878-10131 08
Improved method of solar-cell assembly
LEWIS-12729 878-10438 08
Breather cloth for vacuum curing
MSC-18063 878-10440 08
Applying uniform adhesive coatings
MSC-19462 878-10583 08
Preparing thin aluminum films for
adhesive bonding
NPO-14357 878-10591 08

BONE MARROW

Body/bone-marrow
ture sensor
NPO-14121 878-10066 05

BOOLEAN ALGEBRA

Representation of multivalued logic
functions
NPO-13760 878-10596 09

BOOMS (EQUIPMENT)

Collapsible module extends tenfold in
height
NPO-13371 878-10280 07

BORON CARBIDES

Brazed boron-silicon carbide/aluminum
structural panels
LANGLEY-12244 878-10221 04

BORON REINFORCED MATERIALS

Ultra-high-strength boron fibers
LEWIS-12739 878-10051 04

BOROSILICATE GLASS

Protective coating for laser diodes
LANGLEY-11746 878-10171 03

BOUNDARY LAYER FLOW

Detection of boundary-layer transitions
in wind tunnels
LANGLEY-12261 878-10255 06
Internal and external 2-d boundary layer
flows
LEWIS-13009 878-10260 06

BOUNDARY LAYER STABILITY

Detection of boundary-layer transitions
in wind tunnels
LANGLEY-12261 878-10255 06

BOUNDARY LAYERS

Tumbling-vehicle entry heating
M-FS-23712 878-10555 06

BOURDON TUBES

Pressure-sensitive glass reaction cell
LANGLEY-11256 878-10223 04

BRAGG ANGLE

Measurement of subcoat thickness by
characteristic x-rays
MSC-16718 878-10505 04

BRAKING

Dynamic braking of bidirectional motors
ARC-11194 878-10578 07

BRAZING

High-temperature brazing of stainless
steel
MSC-19459 878-10112 08
Form die and glide plates for vacuum
brazing
MSC-16549 878-10113 08
Internal grid for release of brazing
retorts
MSC-19472 878-10114 08
Vacuum control for brazing stainless
steel
MSC-19457 878-10115 08
Process fabricates flat panels at high
temperatures
MSC-16969 878-10116 08
Two braze alloys for thin-wall
components
M-FS-19206 878-10117 08
Compatibility of Au-Cu-Ni braze alloy
with NH₃
MSC-16864 878-10219 04
Brazed boron-silicon carbide/aluminum
structural panels
LANGLEY-12244 878-10221 04
Repairing pin-fin cold plates
MSC-16424 878-10431 08
Brazing dissimilar aluminum alloys
MSC-16340 878-10587 08

BRIGHTNESS

Z-axis control loop for cathode-ray
tubes
NPO-13775 878-10305 01

BRITTLE MATERIALS

Tile-bonding tool
KSC-11053 878-10134 08
'Gentle' holder for brittle ceramics
MSC-19645 878-10552 06

BUDGETING

Price and cost estimation
M-FS-23812 878-10599 09

BULK MODULUS

Dynamic measurement of bulk modulus
NPO-13226 878-10543 06

BURNING TIME

Fire-resistant wood composites
ARC-11174 878-10508 04

BURNS (INJURIES)

Directory of fire research specialists
LEWIS-13123 878-10399 06

BUTT JOINTS

Detecting overpenetration of
electron-beam welds
M-FS-19396 878-10586 08

BYPASSES

Multiplexed battery-bypass control
system
NPO-14414 878-10474 02
Automatic bypass valve
LANGLEY-12063 878-10558 07
Compact bypass-flow filter
MSC-18311 878-10564 07

C**CALCIUM OXIDES**

High-yield process for preparing calcium
superoxide
ARC-11053 878-10216 04

CALCULATORS

Wire selector/calculator
MSC-16632 878-10120 08

CALIBRATING

Calibration method for an ultrasonic gray-scale recorder
 LEWIS-12782 B78-10016 02
 High-resolution gray-scale recorder
 LEWIS-12783 B78-10017 02
 Improved strain-gage calibration
 MSC-16852 B78-10074 06
 Calibration target for temperature radiometer
 LANGLEY-12239 B78-10083 06
 Mass spectrometer calibration standard
 NPO-14097 B78-10249 06
 Calibration standards for PIND tests
 MSC-18169 B78-10388 06
 Standardized gas-temperature probes
 LEWIS-13059 B78-10392 06
 Orifice calibration module
 LANGLEY-12269 B78-10393 06
 High-sampling-rate pressure transducer has in situ calibration
 LANGLEY-12230 B78-10536 06

CAMERA SHUTTERS

Wide angle pinhole camera
 LANGLEY-11905 B78-10173 03

CAMERAS

Wide angle pinhole camera
 LANGLEY-11905 B78-10173 03

CAMS

Elastic deformation of ball bearings, gears, and cams
 LEWIS-13076 B78-10544 06

CANCELLATION

Adaptive polarization separation experiments
 LANGLEY-12196 B78-10006 01

CANCER

Improved probe for rectal-cancer detection
 NPO-14247 B78-10531 05

CANNULAE

Dip-molded t-shaped cannula
 NPO-14073 B78-10062 05

CANS

Self-sterilizing canister
 NPO-14237 B78-10064 05
 Thermal-control canister
 GSFC-12253 B78-10079 06

CAPACITANCE

Improved driver for capacitive loads
 LANGLEY-11609 B78-10304 01

CAPACITORS

High-temperature capacitive pressure transducer
 LEWIS-13078 B78-10398 06
 Control of dielectric film deposition
 LEWIS-13092 B78-10430 08
 All-ion-implantation process for integrated circuits
 M-FS-23995 B78-10590 08

CARBON DIOXIDE CONCENTRATION

Measurement of total organic concentration in water
 MSC-16497 B78-10048 04

CARBON DIOXIDE LASERS

Laser wire stripping
 MSC-18000 B78-10118 08
 Low-power tuner for lasers
 M-FS-23863 B78-10486 03

CARBON FIBER REINFORCED PLASTICS

Effects of moisture on graphite/epoxy composites
 MSC-18045 B78-10360 04
 Low-cost graphite/epoxy structural panels
 M-FS-23871 B78-10427 08

CARBON FIBERS

Response of graphite/epoxy composites to moisture
 MSC-16899 B78-10228 04

CARBON STEELS

High-temperature brazing of stainless steel
 MSC-19459 B78-10112 08

CARBONATES

Fire-and smoke-retardant polyesters and elastomers
 NPO-14053 B78-10058 04

CARDIOGRAMS

Microprocessor-based cardiopulmonary monitor
 MSC-18235 B78-10369 05

CARDIOVASCULAR SYSTEM

Improved myocardium transducer
 NPO-14107 B78-10372 05

CARRIER INJECTION

All-ion-implantation process for integrated circuits
 M-FS-23995 B78-10590 08

CASES (CONTAINERS)

Fire-retardant covering for small containers
 ARC-11104 B78-10354 04

CAST ALLOYS

Brazing dissimilar aluminum alloys
 MSC-16340 B78-10587 08

CASTING

Void-free foam insulation
 MSC-16805 B78-10127 08
 Portable fluorescent-dye inspection device
 M-FS-24019 B78-10139 08
 High-gradient continuous-casting furnace
 LEWIS-12934 B78-10425 08

CATALYSTS

Hydrogen enrichment of synthetic fuel
 M-FS-23279 B78-10039 04
 Improved imide polymerization catalyst
 ARC-11107 B78-10517 04

CATECHOLAMINE

Chemical measurement of urine volume
 MSC-16585 B78-10238 05

CATHETERIZATION

In vivo blood-flow mapping
 NPO-14133 B78-10244 05

CATHETOMETERS

A probe for blood-vessel and spinal interiors
 NPO-14132 B78-10242 05

CATHODE RAY TUBES

Accurate positioning of characters on CRT displays
 MSC-16505 B78-10014 02
 Z-axis control loop for cathode-ray tubes
 NPO-13775 B78-10305 01
 Plotting shear-flow forces
 MSC-18013 B78-10445 09

CATHODES

Ion-beam-textured graphite
 LEWIS-12724 B78-10506 04

CELLS (BIOLOGY)

Automated chromosome analysis
 NPO-13913 B78-10364 05
 Separating biological cells
 M-FS-23883 B78-10521 05

CEMENTATION

Bonding Kovar pins to an alumina substrate
 MSC-16828 B78-10130 08

CEMENTS

Bonding Kovar pins to an alumina substrate
 MSC-16828 B78-10130 08

CENTRAL PROCESSING UNITS

Multipurpose system simulator
 GSFC-12333 B78-10444 09

CENTRIFUGAL PUMPS

Drag-pump rotating filter
 MSC-16180 B78-10563 07

CERAMIC BONDING

Tile-bonding tool
 KSC-11053 B78-10134 08
 Ceramic-to-metal vacuum seal
 NPO-13803 B78-10437 08

CERAMIC COATINGS

Measurement of subcoat thickness by characteristic x-rays
 MSC-16718 B78-10505 04

CERAMICS

Improved thermal-tile barrier
 MSC-16929 B78-10133 08
 'Gentle' holder for brittle ceramics
 MSC-19645 B78-10552 06

CEREBRUM

Remotely-powered intracranial pressure monitor
 ARC-11120 B78-10362 05

CHAINS

Modified pipe extension safely releases chain binders
 MSC-16937 B78-10103 07

CHARGE DISTRIBUTION

Antistatic coating for acrylics
 NPO-13867 B78-10509 04
 Low partial discharge vacuum feedthrough
 GSFC-12347 B78-10559 07

CHARGED PARTICLES

Portable spark-gap arc generator
 LEWIS-12886 B78-10008 01
 Power loss for high-voltage solar-cell arrays
 LEWIS-12865 B78-10340 03
 Automated electrophoresis apparatus
 M-FS-23983 B78-10516 04

CHARTS

'Space slitter' for film or tape
 KSC-10894 B78-10138 08

CHECKOUT

Fuseholders allow fast system checkout
 MSC-16856 B78-10088 06
 Performance evaluation of an air solar collector
 M-FS-23968 B78-10338 03
 Outdoor tests of a liquid solar collector
 M-FS-23969 B78-10339 03

CHEMICAL ANALYSIS

Modified chemiluminescent NO analyzer accurately measures NOX
 LEWIS-12850 B78-10047 04
 Improved 'spectrophone'
 NPO-14143 B78-10167 03
 Measuring metallic concentrations in glycol solutions
 M-FS-23894 B78-10211 03
 Improvements in microelectrophoresis apparatus
 ARC-11121 B78-10247 05
 Thermoelectrically-cooled erature probe
 MSC-18192 B78-10484 03

CHEMICAL ATTACK

Corrosion detection and evaluation
 M-FS-24436 B78-10227 04
 Embrittlement proof nickel-alloy bellows
 M-FS-19331 B78-10349 04

- Corrosion inhibitors for solar-heating and cooling
M-FS-25023 878-10501 03
- CHEMICAL BONDS**
Predicting structures of cross-linked condensation polymers
NPO-14007 878-10352 04
Fire-resistant wood composites
ARC-11174 878-10508 04
- CHEMICAL REACTION CONTROL**
High-yield process for preparing calcium superoxide
ARC-11053 878-10216 04
Boosting production yield of biomedical peptides
NPO-14142 878-10240 05
- CHEMICAL REACTIONS**
Coal desulfurization with iron pentacarbonyl
NPO-14272 878-10342 04
Low-temperature elastomer production and curing
NPO-13899 878-10346 04
Economical synthesis of potassium superoxide
ARC-10992 878-10353 04
Reducing stickiness of elastomer valve seals
LANGLEY-11778 878-10565 07
- CHEMICAL REACTORS**
Model of silicon production in a fluidized-bed reactor
NPO-14404 878-10520 04
- CHEMICAL TESTS**
Improvements in microelectrophoresis apparatus
ARC-11121 878-10247 05
Fluidic-oscillator gas analyzer
KSC-11014 878-10253 06
- CHEMILUMINESCENCE**
Modified chemiluminescent NO analyzer accurately measures NOX
LEWIS-12850 878-10047 04
Chemiluminescence and bioluminescence microbe detection
MSC-16779 878-10237 05
NO₂ measurement by chemiluminescence
LANGLEY-11378 878-10386 06
- CHROMATOGRAPHY**
High-pressure liquid chromatography of aromatic amines
LANGLEY-12163 878-10515 04
Porous bead packings for gas chromatography
ARC-11222 878-10518 04
- CHROMIUM**
Low-chromium stainless steels
LEWIS-12543 878-10046 04
- CHROMIUM ALLOYS**
Two braze alloys for thin-wall components
M-FS-19206 878-10117 08
- CHROMIUM STEELS**
A sharp knife for high temperatures
MSC-16932 878-10278 07
- CHROMOSOMES**
Automated chromosome analysis
NPO-13913 878-10364 05
- CIRCUIT BOARDS**
Simple tool removes IC flat packs
MSC-16058 878-10010 01
Ultrasonic evaluation of high-voltage circuit boards
LEWIS-12781 878-10087 06
Bench-top soldering aid for PC boards
MSC-16274 878-10121 08
- No-warp potted circuits
MSC-19729 878-10435 08
Circuit-lead trimming template
MSC-16589 878-10439 08
Localized cooling of electronic components
LANGLEY-11955 878-10569 07
- CIRCUIT DIAGRAMS**
CMOS bulk-metal design handbook
M-FS-23856 878-10142 08
- CIRCUIT PROTECTION**
Electrical-ground monitor
MSC-18281 878-10455 01
Overload protection system
NPO-13872 878-10460 01
Load balancing multimodule switching power converters
NPO-13832 878-10461 01
Voltage regulator for solar panels
NPO-13895 878-10478 03
- CIRCUIT RELIABILITY**
Gate-assisted turn-off thyristor
LEWIS-12535 878-10004 01
Shock during PIND test frees particles
M-FS-23829 878-10389 06
- CIRCUITS**
Representation of multivalued logic functions
NPO-13760 878-10596 09
- CIRCLAR ORBITS**
Helicopter position stabilizing system
LANGLEY-11670 878-10256 06
- CIRCLAR TUBES**
Glass tubes for protecting solar cells
NPO-14200 878-10031 03
Self-centering stepped piston
LEWIS-12997 878-10101 07
- CIRCULATORS (PHASE SHIFT CIRCUITS)**
More efficient microwave-power transmission
NPO-13885 878-10466 02
- CIRCULATORY SYSTEM**
Improved myocardium transducer
NPO-14107 878-10372 05
- CLAMPS**
Gentle support stands for fluid-line mockups
MSC-16479 878-10291 08
Quick locking/unlocking retainer
MSC-18048 878-10408 07
Fastener for thin fragile materials
MSC-18097 878-10436 08
Fastener for thermal insulation blankets
MSC-18253 878-10571 07
Bend-absorbing clamp
MSC-16971 878-10575 07
- CLARITY**
Compact turbidity meter
KSC-11063 878-10545 06
- CLASSIFICATIONS**
Directory of fire research specialists
LEWIS-13123 878-10399 06
Postprocessing classification images
MSC-18238 878-10601 09
- CLEAN ENERGY**
Solar-heating system design data brochure
M-FS-23977 878-10492 03
Solar-heating system performance tests
M-FS-25021 878-10493 03
Design and installation of a flat-plate solar collector
M-FS-25010 878-10498 03
- CLEANING**
Electroplating and stripping copper on molybdenum and niobium
LEWIS-12151 878-10055 04
Biological sampling and cleaning device
NPO-14010 878-10245 05
Microcircuit-cleaning machine
MSC-16060 878-10292 08
Shock during PIND test frees particles
M-FS-23829 878-10389 06
- CLEARANCES**
Reducing weld peaking in aluminum
M-FS-23973 878-10433 08
- CLEAVAGE**
Precision cleaver for 'soft' crystals
GSFC-12291 878-10348 04
- CLIPS**
Quick locking/unlocking retainer
MSC-18048 878-10408 07
Fastener for thin fragile materials
MSC-18097 878-10436 08
Fastener for thermal insulation blankets
MSC-18253 878-10571 07
- CLOCKS**
Hybrid clock generator
MSC-18228 878-10530 05
- CLOSED CIRCUIT TELEVISION**
Infrared-enhanced TV for fire detection
M-FS-19380 878-10172 03
- CLOSURES**
Low-leakage low-temperature valve
MSC-18087 878-10420 07
Ceramic-to-metal vacuum seal
NPO-13803 878-10437 08
- CLOTHING**
Automated controller for liquid-cooled garments
MSC-18055 878-10365 05
- COAGULATION**
resterilizable electrode for electrosurgery
HON-10915 878-10370 05
- COAL**
Microbial desulfurization of coal
NPO-14227 878-10038 04
Coal desulfurization with iron pentacarbonyl
NPO-14272 878-10342 04
Improved nucleonic coal-thickness monitor
M-FS-23725 878-10344 04
Coal mining with a liquid solvent
NPO-14028 878-10345 04
Low-temperature refining of coal
NPO-14210 878-10511 04
- COAL LIQUEFACTION**
Coal liquefaction to increase jet fuel production
LANGLEY-12038 878-10343 04
Coal mining with a liquid solvent
NPO-14028 878-10345 04
- COAL UTILIZATION**
Energy conversion alternatives study
LEWIS-13096 878-10330 03
Coal mining with a liquid solvent
NPO-14028 878-10345 04
- COANDA EFFECT**
Wing aerodynamics under blowing jets
LANGLEY-12256 878-10401 06
- COATING**
Holding fixture for variable-contour parts
MSC-16270 878-10429 08
Control of dielectric film deposition
LEWIS-13092 878-10430 08
Scratch resistant plastic lenses
ARC-11039 878-10519 04

- Coating for hot sliding seals
MSC-16529 B78-10562 07
- COATINGS**
Electrically-conducting thermal-control coating
GSFC-12207 B78-10044 04
Fast-drying coating
MSC-16056 B78-10060 04
High-temperature waterproofing for tiles
MSC-16773 B78-10135 08
Repairing silicon carbide coatings
MSC-18033 B78-10226 04
Protective coating for copper in aluminum heat exchangers
M-FS-19334 B78-10286 08
Natural-oxide solar-collector coatings
M-FS-23518 B78-10326 03
Fire-retardant covering for small containers
ARC-11104 B78-10354 04
Ion-beam texturing of materials
LEWIS-12996 B78-10357 04
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 B78-10505 04
Antistatic coating for acrylics
NPO-13867 B78-10509 04
Forming 'dynamic' membranes on stainless steel
MSC-18172 B78-10513 04
Applying uniform adhesive coatings
MSC-19462 B78-10583 08
- COAXIAL CABLES**
Coaxial isolator has versatile interface
MSC-16908 B78-10009 01
- CODING**
Noise tolerant computer link
NPO-14152 B78-10160 02
Efficient digital encoding scheme
MSC-18267 B78-10467 02
Eliminating ambiguity in digital signals
NPO-14289 B78-10469 02
- COHERENT ELECTROMAGNETIC RADIATION**
Common-cavity pumped laser
GSFC-12237 B78-10320 03
Vacuum-ultraviolet laser uses superfluid helium
NPO-13993 B78-10323 03
- COILS**
Safe, durable soil sampler
MSC-18171 B78-10577 07
- COLD SURFACES**
Repairing pin-fin cold plates
MSC-16424 B78-10431 08
- COLLECTION**
Safe, durable soil sampler
MSC-18171 B78-10577 07
- COLLOIDS**
Accelerated purification of colloidal silica sols
MSC-16793 B78-10512 04
- COLOR**
Laser beam color separator
LANGLEY-11806 B78-10174 03
- COLOR TELEVISION**
Processing multispectral signals from a discrete-sensor array
NPO-14211 B78-10442 09
- COLORIMETRY**
A probe for blood-vessel and spinal interiors
NPO-14132 B78-10242 05
- COMBINED STRESS**
Stress analysis under component relative interference fit
LEWIS-12911 B78-10261 06
- COMBUSTION**
Penetrating fire extinguisher
KSC-11064 B78-10397 06
- COMBUSTION CHAMBERS**
Simpler valve for reciprocating engines
MSC-16239 B78-10276 07
- COMBUSTION EFFICIENCY**
Boosting the power of two-stage engines
NPO-14057 B78-10105 07
Stirling-engine design manual
LEWIS-13098 B78-10580 07
- COMMAND AND CONTROL**
Verification of redundancy management design
MSC-16713 B78-10145 09
- COMMUNICATION CABLES**
Calculating wire-bundle diameter
MSC-16378 B78-10119 08
Splicing shielded cables
MSC-18297 B78-10453 01
- COMMUNICATION EQUIPMENT**
Microstrip backfire antenna
LANGLEY-12172 B78-10019 02
Automatic circuit interrupter
MSC-16697 B78-10300 01
Implementing OQASK by using MSK
NPO-13896 B78-10309 01
Noncontact optical communication between moving stations
LANGLEY-12283 B78-10377 06
Processing multispectral signals from a discrete-sensor array
NPO-14211 B78-10442 09
- COMPARATORS**
Femtosecond time-domain phase comparator
GSFC-12228 B78-10162 02
Automatic radio-transmission monitor
NPO-13941 B78-10165 02
Pseudo-continuous-wave acoustic instrument
LANGLEY-12260 B78-10248 06
Automatic gain-balancing circuit
LANGLEY-12074 B78-10297 01
- COMPATIBILITY**
Biocompatibility of surgical implants
NPO-14291 B78-10368 05
Compression testing of flammable liquids
MSC-16121 B78-10548 06
- COMPENSATORS**
Thermal compensator for helium refrigerators
GSFC-12168 B78-10082 06
Improved servocontrol system
M-FS-19358 B78-10150 01
- COMPONENT RELIABILITY**
Curve tracer checks CMOS IC's
GSFC-12209 B78-10007 01
Multiple-sample holder for IC testing
NPO-14314 B78-10540 06
- COMPOSITE MATERIALS**
Ultra-high-strength boron fibers
LEWIS-12739 B78-10051 04
Partial interlaminar separation for composites
LANGLEY-12065 B78-10052 04
Response of graphite/epoxy composites to moisture
MSC-16899 B78-10228 04
- Testing composite sheets at high temperatures
MSC-16237 B78-10252 06
Friction of thick laminates
LANGLEY-12010 B78-10284 08
Effects of moisture on graphite/epoxy composites
MSC-18045 B78-10360 04
Fire-resistant wood composites
ARC-11174 B78-10508 04
- COMPOSITE STRUCTURES**
Void-free bends in laminated structures
MSC-16998 B78-10285 08
Fire-retardant lightweight composite
ARC-10918 B78-10355 04
Heat resistant nontoxic laminate
ARC-11040 B78-10356 04
Lattice panels with high structural efficiency
LANGLEY-11898 B78-10426 08
Low-cost graphite/epoxy structural panels
M-FS-23871 B78-10427 08
Detecting moisture in composite honeycomb panels
MSC-16750 B78-10550 06
- COMPOSITION (PROPERTY)**
Instrument measures many optical properties in visible and IR
LANGLEY-12285 B78-10489 03
- COMPRESSED GAS**
Topping pressure for gas-storage cylinders
MSC-18186 B78-10542 06
- COMPRESSIBILITY**
Verifying the fit of mating contoured surfaces
LANGLEY-11731 B78-10290 08
Dynamic measurement of bulk modulus
NPO-13226 B78-10543 06
- COMPRESSIBLE FLOW**
Flow in axisymmetric ducts with struts
LEWIS-12798 B78-10556 06
Automatic bypass valve
LANGLEY-12063 B78-10558 07
- COMPRESSING**
Improved strain-gage calibration
MSC-16852 B78-10074 06
- COMPRESSION TESTS**
Compression testing of flammable liquids
MSC-16121 B78-10548 06
- COMPRESSOR ROTORS**
Gas-path seal material
LEWIS-12623 B78-10347 04
- COMPUTATION**
Noise calculation on the basis of vortex flow models
LANGLEY-12271 B78-10078 06
- COMPUTER ASSISTED INSTRUCTION**
Computer interface for mechanical arm
M-FS-23849 B78-10015 02
- COMPUTER GRAPHICS**
Accurate positioning of characters on CRT displays
MSC-16505 B78-10014 02
- COMPUTER PROGRAMS**
Detecting servo failures with software
FRC-11003 B78-10396 06
- COMPUTER STORAGE DEVICES**
Strobe-margin test for plated memory systems
M-FS-23838 B78-10154 01
Detecting and correcting bit errors on magnetic tape
NPO-13842 B78-10294 09

- CMOS-array design-automation techniques
M-FS-23762 B78-10311 01
One-third selection for matrix-addressing ferroelectrics
LANGLEY-11993 B78-10456 01
- COMPUTER SYSTEMS DESIGN**
28-Bit serial word simulator/monitor
MSC-16418 B78-10315 02
- COMPUTER SYSTEMS PROGRAMS**
Marshall system for aerospace simulation
M-FS-22672 B78-10296 09
- COMPUTER TECHNIQUES**
Noise tolerant computer link
NPO-14152 B78-10160 02
Automated chromosome analysis
NPO-13913 B78-10364 05
- COMPUTERIZED DESIGN**
Edge geometry of turbomachine blades
LEWIS-12979 B78-10262 06
Structural performance analysis and redesign
LANGLEY-12213 B78-10264 06
- COMPUTERIZED SIMULATION**
Approach and landing simulation
LANGLEY-12060 B78-10091 06
Hydraulic dynamic analysis
MSC-16795 B78-10095 06
Three-phase induction motors
MSC-16904 B78-10281 07
Detecting servo failures with software
FRC-11003 B78-10396 06
- COMPUTERS**
Multipurpose system simulator
GSFC-12333 B78-10444 09
- CONCENTRATION (COMPOSITION)**
Measuring metallic concentrations in glycol solutions
M-FS-23894 B78-10211 03
- CONCENTRATORS**
High-temperature solar converter
GSFC-12234 B78-10032 03
Improved conical solar concentrator
NPO-13825 B78-10187 03
Concentrating solar collector-installation package
M-FS-25068 B78-10500 03
- CONDUCTIVE HEAT TRANSFER**
Vibration-free thermal link
GSFC-12297 B78-10169 03
Convectively cooled structures
LANGLEY-12347 B78-10404 06
- CONICAL BODIES**
Improved conical solar concentrator
NPO-13825 B78-10187 03
Lightweight conical antenna reflector
NPO-13552 B78-10472 02
- CONNECTORS**
Automatic circuit interrupter
MSC-16697 B78-10300 01
Modular ground-wire connector
MSC-16633 B78-10454 01
Miniature thermocouple disconnect
LANGLEY-12013 B78-10535 06
- CONSECUTIVE EVENTS**
Measuring projectile speed
LANGLEY-12387 B78-10538 06
- CONSTRAINTS**
Performance optimizing
LANGLEY-11930 B78-10096 06
Spring control of wire harness loops
MSC-18246 B78-10411 07
- CONSTRUCTION**
Analysis of beam columns
MSC-18009 B78-10402 06
- CONSTRUCTION MATERIALS**
Lattice panels with high structural efficiency
LANGLEY-11898 B78-10426 08
Fire-resistant wood composites
ARC-11174 B78-10508 04
- CONTAMINANTS**
Simple air-piston gas-sampling system
LEWIS-12922 B78-10110 07
Low-background trace-gas detector
NPO-13683 B78-10168 03
- CONTAMINATION**
Simple air-piston gas-sampling system
LEWIS-12922 B78-10110 07
Rapid measurement of bacteria in water
GSFC-12158 B78-10232 05
Monitoring systems for community water supplies
MSC-16778 B78-10233 05
- CONTENT**
Noncontact measurement of angular deflection
LANGLEY-12178 B78-10071 06
- CONTOURS**
Process fabricates flat panels at high temperatures
MSC-16969 B78-10116 08
Verifying the fit of mating contoured surfaces
LANGLEY-11731 B78-10290 08
Holding fixture for variable-contour parts
MSC-16270 B78-10429 08
Contouring pile-brush seals
MSC-16231 B78-10588 08
- CONTROL BOARDS**
Computer interface for mechanical arm
M-FS-23849 B78-10015 02
- CONTROL EQUIPMENT**
Programmable controller for solar heating
M-FS-23915 B78-10183 03
Z-axis control loop for cathode-ray tubes
NPO-13775 B78-10305 01
Automated controller for liquid-cooled garments
MSC-18055 B78-10365 05
Shaft speed control
NPO-14170 B78-10416 07
- CONTROL MOMENT GYROSCOPES**
Helicopter position stabilizing system
LANGLEY-11670 B78-10256 06
- CONTROL SURFACES**
Subminiature hydraulic actuator
LANGLEY-11522 B78-10269 07
- CONTROL THEORY**
Algorithms for linear-systems control
LANGLEY-12313 B78-10443 09
- CONTROLLERS**
Multichannel temperature control for solar heating
M-FS-23775 B78-10182 03
Programmable controller for solar heating
M-FS-23915 B78-10183 03
Power-switch dV/dt sensing
MSC-16707 B78-10307 01
- CONVECTIVE HEAT TRANSFER**
Convectively cooled structures
LANGLEY-12347 B78-10404 06
- CONVEYORS**
Automatic primate feeder
LANGLEY-11586 B78-10246 05
- COOLING**
Modular heat-pipe-radiator panel
MSC-16625 B78-10328 03
Convectively cooled structures
LANGLEY-12347 B78-10404 06
Orbital heat rate package
M-FS-23980 B78-10554 06
Localized cooling of electronic components
LANGLEY-11955 B78-10569 07
- COOLING SYSTEMS**
Flat-plate heat pipe
GSFC-11998 B78-10035 03
Thermal-control canister
GSFC-12253 B78-10079 06
The economics of solar powered absorption cooling
M-FS-23908 B78-10214 03
Application of solar energy to air-conditioning
M-FS-23913 B78-10215 03
Protective coating for copper in aluminum heat exchangers
M-FS-19334 B78-10286 08
Automated controller for liquid-cooled garments
MSC-18055 B78-10365 05
Improved heat-pipe wick
NPO-13391 B78-10381 06
- COORDINATE TRANSFORMATIONS**
Body-fitted coordinates systems transformations
LANGLEY-12307 B78-10147 09
- COORDINATES**
Body-fitted coordinates systems transformations
LANGLEY-12307 B78-10147 09
- COPPER**
Electroplating and stripping copper on molybdenum and niobium
LEWIS-12151 B78-10055 04
Compatibility of Au-Cu-Ni braze alloy with NH₃
MSC-16864 B78-10219 04
Protective coating for copper in aluminum heat exchangers
M-FS-19334 B78-10286 08
- COPPER OXIDES**
Absorptive coating for aluminum solar panels
M-FS-25033 B78-10507 04
- CORRECTION**
Adaptive polarization separation experiments
LANGLEY-12196 B78-10006 01
- CORRELATION DETECTION**
Digital correlator with fewer IC's
MSC-16743 B78-10458 01
- CORROSION**
Corrosion inhibitors for solar heating and cooling systems
M-FS-23892 B78-10209 03
Measuring metallic concentrations in glycol solutions
M-FS-23894 B78-10211 03
Corrosion detection and evaluation
M-FS-24436 B78-10227 04
Corrosion inhibitors for solar-heating and cooling
M-FS-25023 B78-10501 03
- CORROSION PREVENTION**
Corrosion inhibitors for solar heating and cooling systems
M-FS-23892 B78-10209 03
Improved alkali-metal/silicate binders
GSFC-12303 B78-10224 04

- Corrosion detection and evaluation
M-FS-24436 B78-10227 04
Embrittlement proof nickel-alloy bellows
M-FS-19331 B78-10349 04
Eliminating gold migration in
microcircuits
MSC-18213 B78-10462 01
- CORROSION RESISTANCE**
Polyimide adhesives for titanium and
composite bonding
LANGLEY-12257 B78-10040 04
Compatibility of Au-Cu-Ni braze alloy
with NH3
MSC-16864 B78-10219 04
Wide-temperature corrosion-resistant
pressure regulator
NPO-13776 B78-10274 07
- CORROSION TESTS**
Corrosion detection and evaluation
M-FS-24436 B78-10227 04
- COST ANALYSIS**
Handbook for estimating fabrication
costs
M-FS-23795 B78-10140 08
The economics of solar powered
absorption cooling
M-FS-23908 B78-10214 03
- COST EFFECTIVENESS**
Double-sided solar-cell package
NPO-14199 B78-10033 03
Laser wire stripping
MSC-18000 B78-10118 08
- COST ESTIMATES**
Price and cost estimation
M-FS-23812 B78-10599 09
- COST REDUCTION**
Telecommunications network
optimization
NPO-14486 B78-10476 02
- COSTS**
Handbook for estimating fabrication
costs
M-FS-23795 B78-10140 08
- COUNTERS**
Simple air-piston gas-sampling system
LEWIS-12922 B78-10110 07
Synchronous transfer circuits for
redundant systems
NPO-14162 B78-10157 01
- COUPLERS**
Noncontact optical communication
between moving stations
LANGLEY-12283 B78-10377 06
- COUPLING CIRCUITS**
Human arm may act as antenna
ARC-11195 B78-10161 02
- COUPLINGS**
Rigid coupling is also flexible
MSC-16488 B78-10098 07
Compact pressure-line coupling
MSC-16893 B78-10099 07
'Nonfloating' universal joint
MSC-19546 B78-10108 07
High-strength blind rivet
LANGLEY-12154 B78-10287 08
Coupler for moving vehicles
GSFC-12322 B78-10407 07
Insulator for cryogenic joints
M-FS-19361 B78-10419 07
Durable nonslip stainless-steel
drivebelts
GSFC-12276 B78-10567 07
Two (or more) rotary outputs from one
input
MSC-19450 B78-10568 07
- COVERINGS**
Fire-retardant covering for small
containers
ARC-11104 B78-10354 04
- CRACK PROPAGATION**
Analysis of cracked orthotropic sheets
LANGLEY-12288 B78-10405 06
- CRACKING (FRACTURING)**
Gear-tooth fatigue-strength estimates
MSC-18167 B78-10573 07
- CRACKS**
Window flaw detection by backscatter
lighting
MSC-16605 B78-10089 06
Electroplated 'cold patch' for critical
parts
M-FS-19401 B78-10584 08
- CRANIUM**
Remotely-powered intracranial pressure
monitor
ARC-11120 B78-10362 05
- CROP GROWTH**
Predicting crop production from satellite
data
GSFC-12379 B78-10595 09
- CROSSLINKING**
Predicting structures of cross-linked
condensation polymers
NPO-14007 B78-10352 04
- CRUSTAL FRACTURES**
Real-time monitoring of crustal
deformations
NPO-14124 B78-10034 03
- CRYOGENIC EQUIPMENT**
Latching solenoid for cryogenic valves
MSC-18106 B78-10418 07
- CRYOGENICS**
Bonding Kovar pins to an alumina
substrate
MSC-16828 B78-10130 08
Insulator for cryogenic joints
M-FS-19361 B78-10419 07
High-pressure cryogenic cylinder seal
M-FS-19335 B78-10421 07
- CRYOSTATS**
Cryostat safety tent
GSFC-12206 B78-10080 06
- CRYSTAL GROWTH**
Process for growing thin polished silicon
sheets
NPO-14172 B78-10434 08
Controlling the growth of silicon sheets
NPO-14295 B78-10581 08
Automated control of crystal growth
NPO-14420 B78-10582 08
- CRYSTAL OSCILLATORS**
Multichannel VCO needs only one
reference
MSC-18225 B78-10448 01
- CRYSTAL SURFACES**
Ruby c-axis alignment system
NPO-14252 B78-10379 06
- CRYSTALS**
Precision cleaver for 'soft' crystals
GSFC-12291 B78-10348 04
- CUMULATIVE DAMAGE**
Damage-detection system for LNG
carriers
LANGLEY-11463 B78-10250 06
- CURING**
Cure-rate data for silicone adhesive
GSFC-12330 B78-10057 04
Fast-drying coating
MSC-16056 B78-10060 04
Match-mold process for foam insulation
MSC-16631 B78-10126 08
- Void-free foam insulation
MSC-16805 B78-10127 08
High-rise foam-in-place process
MSC-16931 B78-10128 08
Predicting structures of cross-linked
condensation polymers
NPO-14007 B78-10352 04
Breather cloth for vacuum curing
MSC-18063 B78-10440 08
- CURRENT AMPLIFIERS**
Improved driver for capacitive loads
LANGLEY-11609 B78-10304 01
- CURRENT DENSITY**
Electroplating and stripping copper on
molybdenum and niobium
LEWIS-12151 B78-10055 04
- CURRENT REGULATORS**
Automatic load sharing in inverter
modules
NPO-14056 B78-10302 01
Improved driver for capacitive loads
LANGLEY-11609 B78-10304 01
Overload protection system
NPO-13872 B78-10460 01
Load balancing multimodule switching
power converters
NPO-13832 B78-10461 01
- CURVE FITTING**
Real-time instrument averages 100 data
sets
LEWIS-13093 B78-10534 06
- CUSHIONS**
Air cushion landing system
LANGLEY-12303 B78-10259 06
Low-frequency vibration isolation
NPO-13915 B78-10275 07
- CUTTERS**
Tool simplifies weld preparation of
aluminum
MSC-16992 B78-10123 08
Precision cleaver for 'soft' crystals
GSFC-12291 B78-10348 04
- CUTTING**
Laser wire stripping
MSC-18000 B78-10118 08
Contouring pile-brush seals
MSC-16231 B78-10588 08
- CYCLES**
Automated temperature-cycling
apparatus
LANGLEY-12310 B78-10391 06
- CYCLIC LOADS**
Two (or more) rotary outputs from one
input
MSC-19450 B78-10568 07
- CYLINDRICAL CHAMBERS**
Topping pressure for gas-storage
cylinders
MSC-18186 B78-10542 06
- CYLINDRICAL SHELLS**
Self-centering stepped piston
LEWIS-12997 B78-10101 07
Wrench for thin-walled cylinders
LANGLEY-12286 B78-10579 07
- CZOCHRALSKI METHOD**
Process for growing thin polished silicon
sheets
NPO-14172 B78-10434 08

D

DAMAGE

- Predicting damage from exploding
vessels
LEWIS-13042 B78-10258 06

- DAMPERS (VALVES)**
Stable hydraulic pressure regulator
LEWIS-13058 878-10417 07
- DAMPING**
Low-frequency vibration isolation
NPO-13915 878-10275 07
- DATA**
Postprocessing classification images
MSC-18238 878-10601 09
- DATA ACQUISITION**
Chopper-stabilized phase detector
MSC-16461 878-10163 02
Monitoring systems for community water supplies
MSC-16778 878-10233 05
Data processing for water monitoring system
MSC-16842 878-10234 05
Water sample-collection and distribution system
MSC-16841 878-10235 05
28-Bit serial word simulator/monitor
MSC-16418 878-10315 02
Electronically-scanned pressure measurement system
LANGLEY-12386 878-10394 06
- DATA COMPRESSION**
Simplified data compressor
NPO-14041 878-10023 02
- DATA CONVERTERS**
28-Bit serial word simulator/monitor
MSC-16418 878-10315 02
- DATA CORRELATION**
Digital correlator with fewer IC's
MSC-16743 878-10458 01
- DATA LINKS**
Noise tolerant computer link
NPO-14152 878-10160 02
28-Bit serial word simulator/monitor
MSC-16418 878-10315 02
- DATA PROCESSING**
Interactive data-processing system for metallurgy
M-FS-23774 878-10217 04
A parameter-estimation subroutine package
NPO-14263 878-10447 09
Wideband digital spectrum analyzer
NPO-14394 878-10468 02
Telecommunications network optimization
NPO-14486 878-10476 02
- DATA PROCESSING EQUIPMENT**
28-Bit serial word simulator/monitor
MSC-16418 878-10315 02
Multipurpose system simulator
GSFC-12333 878-10444 09
- DATA RECORDING**
Portable data system
ARC-11136 878-10316 02
Efficient digital encoding scheme
MSC-18267 878-10467 02
- DATA REDUCTION**
Infrared scanners for temperature measurement in wind tunnels
LANGLEY-12171 878-10077 06
Data reformatting with less hardware
NPO-13676 878-10470 02
- DATA STORAGE**
Automatic radio-transmission monitor
NPO-13941 878-10165 02
Water sample-collection and distribution system
MSC-16841 878-10235 05
- DATA SYSTEMS**
Accurate positioning of characters on CRT displays
MSC-16505 878-10014 02
- DATA TRANSMISSION**
Simplified data compressor
NPO-14041 878-10023 02
Noise tolerant computer link
NPO-14152 878-10160 02
Detecting and correcting bit errors on magnetic tape
NPO-13842 878-10294 09
Implementing OQASK by using MSK
NPO-13896 878-10309 01
28-Bit serial word simulator/monitor
MSC-16418 878-10315 02
Noncontact optical communication between moving stations
LANGLEY-12283 878-10377 06
Efficient digital encoding scheme
MSC-18267 878-10467 02
- DECODING**
Processing multispectral signals from a discrete-sensor array
NPO-14211 878-10442 09
- DECOMMUTATORS**
Data reformatting with less hardware
NPO-13676 878-10470 02
- DECONTAMINATION**
Self-sterilizing canister
NPO-14237 878-10064 05
Biological sampling and cleaning device
NPO-14010 878-10245 05
Coal desulfurization with iron pentacarbonyl
NPO-14272 878-10342 04
Corona-discharge air-purification system
ARC-10975 878-10350 04
Shock during PIND test frees particles
M-FS-23829 878-10389 06
Accelerated purification of colloidal silica sols
MSC-16793 878-10512 04
- DEEP SCATTERING LAYERS**
Acoustic-optical imaging without immersion
M-FS-23876 878-10549 06
- DEFLECTION**
Combination force and angular-deflection indicator
MSC-16155 878-10070 06
Noncontact measurement of angular deflection
LANGLEY-12178 878-10071 06
Aircraft trailing vortex hazard alleviators
LANGLEY-12034 878-10272 07
- DEFORMATION**
Stress analysis under component relative interference fit
LEWIS-12911 878-10261 06
Measuring surface displacements optically
M-FS-23861 878-10321 03
No-warp potted circuits
MSC-19729 878-10435 08
Elastic deformation of ball bearings, gears, and cams
LEWIS-13076 878-10544 06
Detecting surface deformations photographically
MSC-16156 878-10547 06
- DEGASSING**
Deaerating high-viscosity silicon rubber
MSC-16694 878-10514 04
- DEGRADATION**
Corrosion detection and evaluation
M-FS-24436 878-10227 04
- DEHUMIDIFICATION**
Long-lasting solid-polymer electrolytic hygrometer
NPO-13948 878-10086 06
- DEMODULATION**
Automatic acquisition and ranging system
NPO-13982 878-10312 02
- DEMODULATORS**
Miniature Ku-Band down converter
MSC-18313 878-10450 01
Simplified phase detector
NPO-13395 878-10457 01
Narrow-bandwidth receiver
GSFC-12142 878-10463 02
- DENDRITIC CRYSTALS**
Eliminating gold migration in microcircuits
MSC-18213 878-10462 01
- DEPOSITION**
Ion-beam texturing of materials
LEWIS-12996 878-10357 04
Control of dielectric film deposition
LEWIS-13092 878-10430 08
- DEPTH MEASUREMENT**
Ocean-wave ray or crest diagrams in shoaling waters
LANGLEY-12380 878-10341 03
- DESIGN ANALYSIS**
Performance optimizing
LANGLEY-11930 878-10096 06
CMOS bulk-metal design handbook
M-FS-23856 878-10142 08
Thermal performance of shaft bearing system
LEWIS-12761 878-10263 06
CMOS-array design-automation techniques
M-FS-23762 878-10311 01
Problems encountered in solar heating and cooling systems
M-FS-23974 878-10331 03
Lines, bellows, flexible hoses, and filters
LEWIS-13077 878-10424 07
- DESULFURIZING**
Microbial desulfurization of coal
NPO-14227 878-10038 04
Coal desulfurization with iron pentacarbonyl
NPO-14272 878-10342 04
Low-temperature refining of coal
NPO-14210 878-10511 04
- DETECTION**
Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 878-10085 06
Compact piston-position sensor
LEWIS-12392 878-10102 07
Portable data system
ARC-11136 878-10316 02
Modulation improves electro-optic object detector
M-FS-23776 878-10380 06
Simplified phase detector
NPO-13395 878-10457 01
System for monitoring lightning strikes
KSC-11018 878-10475 02
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 878-10505 04
- DETONATION WAVES**
Predicting damage from exploding vessels
LEWIS-13042 878-10258 06

DIAGNOSIS

Automated tester for MOS devices
NPO-14088 B78-10001 01

DIALYSIS

Positively charged membrane for urea dialysis
NPO-14101 B78-10241 05

DIAMETERS

Calculating wire-bundle diameter
MSC-16378 B78-10119 08

DIAMINES

Polyimide adhesives for titanium and composite bonding
LANGLEY-12257 B78-10040 04

DIAPHRAGMS (MECHANICS)

High-temperature capacitive pressure transducer
LEWIS-13078 B78-10398 06

DIELECTRICS

Control of dielectric film deposition
LEWIS-13092 B78-10430 08

DIES

Form die and glide plates for vacuum brazing
MSC-16549 B78-10113 08

DIFFERENTIAL EQUATIONS

Algorithms for linear-systems control
LANGLEY-12313 B78-10443 09

DIFFERENTIAL THERMAL ANALYSIS

Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 B78-10085 06

DIFFRACTION

Diffractoid x-ray focusing
GSFC-12357 B78-10487 03
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 B78-10505 04

DIGESTIVE SYSTEM

Antihistamines reduce ulceration produced by indomethacin
ARC-11118 B78-10366 05

DIGITAL DATA

Digital correlator with fewer IC's
MSC-16743 B78-10458 01
Efficient digital encoding scheme
MSC-18267 B78-10467 02

DIGITAL SIMULATION

Electrolysis cell stimulation
LEWIS-12740 B78-10179 03
Marshall system for aerospace simulation
M-FS-22672 B78-10296 09

DIGITAL TECHNIQUES

Wideband digital spectrum analyzer
NPO-14394 B78-10468 02
Eliminating ambiguity in digital signals
NPO-14289 B78-10469 02
Data reformatting with less hardware
NPO-13676 B78-10470 02
Hybrid heart/breath-rate processor
MSC-18227 B78-10528 05

DIGITAL TO ANALOG CONVERTERS

Fast differential analog-to-digital conversion
LEWIS-12909 B78-10149 01

DILUTION

Automated electrochemical selection of coliforms
MSC-16777 B78-10236 05

DIMENSIONAL STABILITY

Abrasion-resistant antireflective coating for polycarbonate
ARC-11047 B78-10054 04

DIODES

Precise matching of diodes
NPO-14293 B78-10452 01

DIPOLE ANTENNAS

Efficient rectifying antenna
NPO-13884 B78-10471 02

DIPPING

Dip-molded t-shaped cannula
NPO-14073 B78-10062 05

DIRECTIONAL ANTENNAS

Compact antenna has symmetrical radiation pattern
ARC-11189 B78-10473 02

DIRECTIVITY

Directional laser velocimeter with doppler velocity simulator
LANGLEY-12176 B78-10029 03

DISCONNECT DEVICES

Preventing radio-paging system tieup
MSC-19696 B78-10024 02
Compact pressure-line coupling
MSC-16893 B78-10099 07
Automatic circuit interrupter
MSC-16697 B78-10300 01
Easily-wired toggle switch
MSC-18102 B78-10301 01
Miniature thermocouple disconnect
LANGLEY-12013 B78-10535 06

DISPENSERS

Automatic primate feeder
LANGLEY-11586 B78-10246 05

DISPLACEMENT

Analysis of beam columns
MSC-18009 B78-10402 06

DISPLACEMENT MEASUREMENT

Measuring surface displacements optically
M-FS-23861 B78-10321 03

DISPLAY DEVICES

Accurate positioning of characters on CRT displays
MSC-16505 B78-10014 02
'Space slider' for film or tape
KSC-10894 B78-10138 08
Water sample-collection and distribution system
MSC-16841 B78-10235 05
Plotting shear-flow forces
MSC-18013 B78-10445 09
Hybrid LCD driver
MSC-18229 B78-10529 05

DISSOLVING

Electroplating and stripping copper on molybdenum and niobium
LEWIS-12151 B78-10055 04

DISTANCE MEASURING EQUIPMENT

Optical traffic-sensing concept
NPO-13603 B78-10021 02

DISTRIBUTION

Water sample-collection and distribution system
MSC-16841 B78-10235 05

DOCUMENTATION

Medical Information Management System
GSFC-12078 B78-10376 05

DOORS

Combined hinge and latch
MSC-19602 B78-10572 07

DOSIMETERS

Stacked solar cells measure X-ray exposure
NPO-13954 B78-10243 05

DOWNTIME

Computation of spare parts requirements
MSC-16872 B78-10593 09

DOWNWASH

WAKE and WASH
LANGLEY-12262 B78-10093 06

DRAG

Flicking-wire drag tensioner
MSC-16367 B78-10109 07
Nacelle incremental drag
LEWIS-12786 B78-10400 06
Wing aerodynamics under blowing jets
LANGLEY-12256 B78-10401 06

DRAG REDUCTION

Aerodynamic design lowers truck fuel consumption
FRC-11015 B78-10069 06

DRILLING

Pulse-echo probe of rock permeability near oil wells
NPO-14192 B78-10222 04

DRUGS

Antihistamines reduce ulceration produced by indomethacin
ARC-11118 B78-10366 05

DRY CELLS

Continuous process fabricates battery plaque
GSFC-12054 B78-10132 08

DUCTED BODIES

Flow in axisymmetric ducts with struts
LEWIS-12798 B78-10556 06

DUCTILITY

Low-chromium stainless steels
LEWIS-12543 B78-10046 04

DUCTS

Flow velocities and streamlines
LEWIS-12966 B78-10094 06

DUST

Shock during PIND test frees particles
M-FS-23829 B78-10389 06

DYES

Fluorescent paint simplifies laser-beam alignment
LEWIS-12571 B78-10030 03
Portable fluorescent-dye inspection device
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Fire-and smoke-retardant polyesters and elastomers
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Low-temperature elastomer production and curing
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MSC-16904 B78-10281 07
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 LEWIS-13123 B78-10399 06

FITTING
 Reducing weld peaking in aluminum
 M-FS-23973 B78-10433 08
 'Blind' position indicator
 MSC-16972 B78-10570 07

FITTINGS
 Compact pressure-line coupling
 MSC-16893 B78-10099 07
 Fastener for thin fragile materials
 MSC-18097 B78-10436 08
 Easily installed insulation for steamfittings
 MSC-18277 B78-10589 08

FIXTURES
 Welding fixture for thin metal parts
 GSFC-12318 B78-10428 08
 Holding fixture for variable-contour parts
 MSC-16270 B78-10429 08
 'Gentle' holder for brittle ceramics
 MSC-19645 B78-10552 06
 Wrench for thin-walled cylinders
 LANGLEY-12286 B78-10579 07

FLAME PROPAGATION
 Fire-resistant wood composites
 ARC-11174 B78-10508 04

FLAME RETARDANTS
 Flame-retardant adhesive tape
 MSC-16721 B78-10041 04
 Fire-retardant foams
 MSC-16222 B78-10053 04
 Fire-and smoke-retardant polyesters and elastomers
 NPO-14053 B78-10058 04
 Improved imide polymerization catalyst
 ARC-11107 B78-10517 04

FLAMMABILITY
 Compression testing of flammable liquids
 MSC-16121 B78-10548 06

FLAMMABLE GASES
 Cryostat safety tent
 GSFC-12206 B78-10080 06

FLAT PLATES
 Flat-plate heat pipe
 GSFC-11998 B78-10035 03
 Process fabricates flat panels at high temperatures
 MSC-16969 B78-10116 08
 Flat-plate liquid solar collector
 M-FS-23912 B78-10205 03

FLATNESS
 Process fabricates flat panels at high temperatures
 MSC-16969 B78-10116 08

FLEXIBILITY
 Stability characteristics of elastic airplane
 ARC-11144 B78-10092 06

Lines, bellows, flexible hoses, and filters
 LEWIS-13077 878-10424 07

FLEXING
 Artificial leg with natural gait
 M-FS-23225 878-10239 05

FLIP-FLOPS
 Synchronous transfer circuits for redundant systems
 NPO-14162 878-10157 01
 Signal-interleaving device
 GSFC-12111 878-10319 03

FLOW DISTRIBUTION
 Noise calculation on the basis of vortex flow models
 LANGLEY-12271 878-10078 06
 Hydraulic dynamic analysis
 MSC-16795 878-10095 06
 Detection of boundary-layer transitions in wind tunnels
 LANGLEY-12261 878-10255 06
 Internal and external 2-d boundary layer flows
 LEWIS-13009 878-10260 06

FLOW MEASUREMENT
 In vivo blood-flow mapping
 NPO-14133 878-10244 05
 Meter for very slow flows
 MSC-18112 878-10267 07
 Aircraft trailing vortex hazard alleviators
 LANGLEY-12034 878-10272 07
 'Pseudobackscatter' laser velocimeter
 ARC-10970 878-10318 03
 Orifice calibration module
 LANGLEY-12269 878-10393 06
 Static-pressure probe for small geometries
 LANGLEY-11552 878-10395 06
 Miniature velocimeter
 LANGLEY-12281 878-10539 06

FLOW REGULATORS
 Precision fluid-pressure regulator
 NPO-13370 878-10106 07
 Meter for very slow flows
 MSC-18112 878-10267 07
 Flow-compensating pressure regulator
 LEWIS-12718 878-10522 05
 Automatic bypass valve
 LANGLEY-12063 878-10558 07
 Adjustable gas-flow restrictor
 MSC-19486 878-10560 07

FLOW VELOCITY
 Flow velocities and streamlines
 LEWIS-12966 878-10094 06
 Pneumatic servomechanisms
 M-FS-23295 878-10144 08
 Flow-compensating pressure regulator
 LEWIS-12718 878-10522 05

FLOW VISUALIZATION
 Detection of boundary-layer transitions in wind tunnels
 LANGLEY-12261 878-10255 06

FLOWMETERS
 Meter for very slow flows
 MSC-18112 878-10267 07

FLUID DYNAMICS
 Convectively cooled structures
 LANGLEY-12347 878-10404 06
 Graphics program for charts
 LEWIS-12811 878-10598 09

FLUID FILTERS
 Lines, bellows, flexible hoses, and filters
 LEWIS-13077 878-10424 07
 Drag-pump rotating filter
 MSC-16180 878-10563 07

Compact bypass-flow filter
 MSC-18311 878-10564 07

FLUID FLOW
 Precision fluid-pressure regulator
 NPO-13370 878-10106 07
 Thermal hydraulic analyzer
 MSC-18014 878-10265 06
 Meter for very slow flows
 MSC-18112 878-10267 07
 Static-pressure probe for small geometries
 LANGLEY-11552 878-10395 06
 Plotting shear-flow forces
 MSC-18013 878-10445 09
 Adjustable gas-flow restrictor
 MSC-19486 878-10560 07

FLUID MECHANICS
 Thermal hydraulic analyzer
 MSC-18014 878-10265 06

FLUID SWITCHING ELEMENTS
 Magnetostrictive valve
 NPO-14235 878-10104 07
 Fluidic-oscillator gas analyzer
 KSC-11014 878-10253 06

FLUID TRANSMISSION LINES
 Gentle support stands for fluid-line mockups
 MSC-16479 878-10291 08
 Lines, bellows, flexible hoses, and filters
 LEWIS-13077 878-10424 07
 Refrigerant leak detector
 MSC-18214 878-10551 06
 Transmitting rotary motion at an angle
 MSC-19483 878-10561 07

FLUIDIC CIRCUITS
 Fluidic-oscillator gas analyzer
 KSC-11014 878-10253 06

FLUIDIZED BED PROCESSORS
 Model of silicon production in a fluidized-bed reactor
 NPO-14404 878-10520 04

FLUORESCENCE
 Fluorescent paint simplifies laser-beam alignment
 LEWIS-12571 878-10030 03
 Custom blending of lamp phosphors
 MSC-16692 878-10056 04
 Fluorescent microspheres
 NPO-13946 878-10068 05
 Portable fluorescent-dye inspection device
 M-FS-24019 878-10139 08

FLUORINE
 Wide-temperature corrosion-resistant pressure regulator
 NPO-13776 878-10274 07

FLUOROCARBONS
 Fast-drying coating
 MSC-16056 878-10060 04

FOAMS
 Fire-retardant foams
 MSC-16222 878-10053 04
 Void-free foam insulation
 MSC-16805 878-10127 08
 High-rise foam-in-place process
 MSC-16931 878-10128 08
 Fire-retardant lightweight composite
 ARC-10918 878-10355 04
 Improved imide polymerization catalyst
 ARC-11107 878-10517 04

FOCUSING
 Zone-refining encapsulated semiconductors
 M-FS-23902 878-10351 04
 Diffractoid x-ray focusing
 GSFC-12357 878-10487 03

FOLDING STRUCTURES
 Collapsible module extends tenfold in height
 NPO-13371 878-10280 07

FORCE DISTRIBUTION
 Plotting shear-flow forces
 MSC-18013 878-10445 09
 Gear-tooth fatigue-strength estimates
 MSC-18167 878-10573 07

FORECASTING
 Predicting surface heat flux
 MSC-16095 878-10090 06

FOSSIL FUELS
 Energy conversion alternatives study
 LEWIS-13096 878-10330 03
 Coal desulfurization with iron pentacarbonyl
 NPO-14272 878-10342 04

FOURIER ANALYSIS
 Improved fourier interference spectrometer
 NPO-14025 878-10485 03

FRACTURE STRENGTH
 Partial interlaminar separation for composites
 LANGLEY-12065 878-10052 04

FRAGMENTATION
 Predicting damage from exploding vessels
 LEWIS-13042 878-10258 06

FRAMES
 Calculation of planar-truss modal frequencies
 LANGLEY-12137 878-10382 06
 Rigid 'Sling' for topheavy loads
 GSFC-12359 878-10574 07

FREEZING
 Controlled freezing of biological samples
 GSFC-12173 878-10065 05

FREON
 Refrigerant leak detector
 MSC-18214 878-10551 06

FREQUENCY ANALYZERS
 Hybrid random-sound test-control system
 NPO-13900 878-10025 02
 Wideband digital spectrum analyzer
 NPO-14394 878-10468 02

FREQUENCY CONVERTERS
 More efficient microwave-power transmission
 NPO-13885 878-10466 02

FREQUENCY DISTRIBUTION
 Improved fourier interference spectrometer
 NPO-14025 878-10485 03

FREQUENCY DIVIDERS
 Data reformatting with less hardware
 NPO-13676 878-10470 02

FREQUENCY MEASUREMENT
 Pseudo-continuous-wave acoustic instrument
 LANGLEY-12260 878-10248 06

FREQUENCY MODULATION
 Determining the response of an FM receiver
 MSC-16751 878-10465 02

FREQUENCY MULTIPLIERS
 Digital phase shifter synchronizes local oscillators
 MSC-16695 878-10011 01

FREQUENCY SHIFT KEYING
 Implementing OQASK by using MSK
 NPO-13896 878-10309 01

FREQUENCY STABILITY

Multichannel VCO needs only one reference
MSC-18225 B78-10448 01

FREQUENCY STANDARDS

Hydrogen-maser frequency standard
GSFC-12334 B78-10490 03

FREQUENCY SYNCHRONIZATION

Digital phase shifter synchronizes local oscillators
MSC-16695 B78-10011 01

FRICTION DRAG

Tumbling-vehicle entry heating
M-FS-23712 B78-10555 06

FRICTION REDUCTION

Dynamics of gas-thrust bearings
LEWIS-12754 B78-10097 06
Gas-path seal material
LEWIS-12623 B78-10347 04
Coating for hot sliding seals
MSC-16529 B78-10562 07

FUEL CELLS

Energy conversion alternatives study
LEWIS-13096 B78-10330 03

FUEL CONSUMPTION

Aerodynamic design lowers truck fuel consumption
FRC-11015 B78-10069 06
Boosting the power of two-stage engines
NPO-14057 B78-10105 07

FUEL CONTROL

Electric and hybrid vehicles
LEWIS-13077 B78-10423 07

FUEL VALVES

Simpler valve for reciprocating engines
MSC-16239 B78-10276 07
Low-leakage low-temperature valve
MSC-18087 B78-10420 07

FUELS

Coal liquefaction to increase jet fuel production
LANGLEY-12038 B78-10343 04
Low-temperature elastomer production and curing
NPO-13899 B78-10346 04
Predicting structures of cross-linked condensation polymers
NPO-14007 B78-10352 04

FUNCTION GENERATORS

Three-function signal generator
MSC-16672 B78-10306 01

FURNACES

Slurry-powder sintering furnace
LANGLEY-11423 B78-10293 08
Temperature-gradient oven
M-FS-23919 B78-10390 06
High-gradient continuous-casting furnace
LEWIS-12934 B78-10425 08

FUSION (MELTING)

Improved thermal-tile barrier
MSC-16929 B78-10133 08

FUSION WELDING

Improved electron-beam welder
M-FS-23772 B78-10143 08

G

GALLIUM ARSENIDE LASERS

Protective coating for laser diodes
LANGLEY-11746 B78-10171 03

GALLIUM ARSENIDES

More efficient GaAs solar cells
LANGLEY-12216 B78-10479 03

GALVANOMETERS

Noncontact measurement of angular deflection
LANGLEY-12178 B78-10071 06

GANTRY CRANES

Rigid 'Sling' for topheavy loads
GSFC-12359 B78-10574 07

GARMENTS

Automated controller for liquid-cooled garments
MSC-18055 B78-10365 05

GAS ANALYSIS

Simple air-piston gas-sampling system
LEWIS-12922 B78-10110 07
Improved 'spectrophone'
NPO-14143 B78-10167 03
Mass spectrometer calibration standard
NPO-14097 B78-10249 06
Free-air content in fluid systems
MSC-16703 B78-10251 06
Fluidic-oscillator gas analyzer
KSC-11014 B78-10253 06
Device for pitching off metal tubes
GSFC-12274 B78-10410 07
Porous bead packings for gas chromatography
ARC-11222 B78-10518 04

GAS BEARINGS

Dynamics of gas-thrust bearings
LEWIS-12754 B78-10097 06
Improved gas thrust bearings
LEWIS-12569 B78-10413 07

GAS COMPOSITION

Free-air content in fluid systems
MSC-16703 B78-10251 06

GAS COOLING

Controlled freezing of biological samples
GSFC-12173 B78-10065 05
Thermocouples measure very-hot gas temperatures
LEWIS-12843 B78-10076 06
Localized cooling of electronic components
LANGLEY-11955 B78-10569 07

GAS DENSITY

Improved electron-beam probe for hypersonic flows
NPO-13793 B78-10254 06

GAS DETECTORS

Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 B78-10085 06
Low-background trace-gas detector
NPO-13683 B78-10168 03
Damage-detection system for LNG carriers
LANGLEY-11463 B78-10250 06
Improved electron-beam probe for hypersonic flows
NPO-13793 B78-10254 06
NO₂ measurement by chemiluminescence
LANGLEY-11378 B78-10386 06

GAS EVOLUTION

Deaerating high-viscosity silicon rubber
MSC-16694 B78-10514 04

GAS FLOW

Automatic bypass valve
LANGLEY-12063 B78-10558 07
Adjustable gas-flow restrictor
MSC-19486 B78-10560 07

GAS LUBRICANTS

Dynamics of gas-thrust bearings
LEWIS-12754 B78-10097 06

GAS MASERS

Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07
Hydrogen-maser frequency standard
GSFC-12334 B78-10490 03

GAS PIPES

Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 B78-10085 06

GAS PRESSURE

Vacuum control for brazing stainless steel
MSC-19457 B78-10115 08
High-temperature microphone system
LANGLEY-12375 B78-10384 06
Topping pressure for gas-storage cylinders
MSC-18186 B78-10542 06

GAS TEMPERATURE

High-temperature microphone system
LANGLEY-12375 B78-10384 06
Standardized gas-temperature probes
LEWIS-13059 B78-10392 06

GAS VALVES

Magnetostrictive valve
NPO-14235 B78-10104 07
Low-leakage low-temperature valve
MSC-18087 B78-10420 07

GASES

Embrittlement proof nickel-alloy bellows
M-FS-19331 B78-10349 04
Oxygen and nitrogen raman spectra
LEWIS-12849 B78-10361 04
Graphics program for charts
LEWIS-12811 B78-10598 09

GASKETS

High-pressure cryogenic cylinder seal
M-FS-19335 B78-10421 07
Ceramic-to-metal vacuum seal
NPO-13803 B78-10437 08
Metallic thermal seal
MSC-18135 B78-10566 07

GASOLINE

Coal liquefaction to increase jet fuel production
LANGLEY-12038 B78-10343 04

GASTROINTESTINAL SYSTEM

Antihistamines reduce ulceration produced by indomethacin
ARC-11118 B78-10366 05

GATES (CIRCUITS)

Gate-assisted turn-off thyristor
LEWIS-12535 B78-10004 01

GEAR TEETH

Gear-tooth fatigue-strength estimates
MSC-18167 B78-10573 07

GEARS

Shaft speed control
NPO-14170 B78-10416 07
Elastic deformation of ball bearings, gears, and cams
LEWIS-13076 B78-10544 06
Gear-tooth fatigue-strength estimates
MSC-18167 B78-10573 07

GELS

Predicting structures of cross-linked condensation polymers
NPO-14007 B78-10352 04

GEOCENTRIC COORDINATES

Solar-electric geocentric transfer
LEWIS-12939 B78-10403 06

GEOLOGY

Mounting procedure for geological samples
MSC-18206 B78-10327 03

GLASS

Pressure-sensitive glass reaction cell
 LANGLEY-11256 B78-10223 04
 Vacuum leadthrough for hydrogen maser
 NPO-14148 B78-10422 07

GLASS COATINGS

Boron trifluoride coatings for plastics
 ARC-11057 B78-10043 04
 Protective coating for laser diodes
 LANGLEY-11746 B78-10171 03

GLASS FIBER REINFORCED PLASTICS

Heat resistant nontoxic laminate
 ARC-11040 B78-10356 04

GLASS FIBERS

Contouring pile-brush seals
 MSC-16231 B78-10588 08

GLAUCOMA

Intraocular pressure reduction and regulation
 LEWIS-12723 B78-10523 05

GLOW DISCHARGES

Boron trifluoride coatings for plastics
 ARC-11057 B78-10043 04
 Abrasion-resistant antireflective coating for polycarbonate
 ARC-11047 B78-10054 04

GLYCOLS

Measuring metallic concentrations in glycol solutions
 M-FS-23894 B78-10211 03

GOLD ALLOYS

Compatibility of Au-Cu-Ni braze alloy with NH3
 MSC-16864 B78-10219 04

GOLD COATINGS

Eliminating gold migration in microcircuits
 MSC-18213 B78-10462 01

GONIOMETERS

Instrument measures many optical properties in visible and IR
 LANGLEY-12285 B78-10489 03

GRANULAR MATERIALS

Wrought nickel-base superalloy
 LEWIS-12844 B78-10045 04
 Mounting procedure for geological samples
 MSC-18206 B78-10327 03

GRAPHITE

Response of graphite/epoxy composites to moisture
 MSC-16899 B78-10228 04
 Low-cost graphite/epoxy structural panels
 M-FS-23871 B78-10427 08
 Ion-beam-textured graphite
 LEWIS-12724 B78-10506 04

GRAPHS (CHARTS)

Graphics program for charts
 LEWIS-12811 B78-10598 09

GROUP VELOCITY

Direct-reading group-delay measurement
 NPO-13909 B78-10156 01

GUNN DIODES

Multichannel VCO needs only one reference
 MSC-18225 B78-10448 01

GYROSCOPES

Optical gyroscope
 NPO-14258 B78-10176 03

H

HALL EFFECT

Hall devices improve electric motor efficiency
 M-FS-23828 B78-10303 01
 Noncontacting valve-position indicator
 MSC-16048 B78-10412 07

HANDBOOKS

Toxic substances handbook
 LEWIS-13124 B78-10359 04

HANDLES

Modified pipe extension safely releases chain binders
 MSC-16937 B78-10103 07
 Ladle for pouring hot melt
 MSC-16974 B78-10137 08
 Compact ratchet wrench
 M-FS-24252 B78-10273 07
 Extension handle for spray cans
 KSC-11083 B78-10576 07

HARDNESS

Scratch resistant plastic lenses
 ARC-11039 B78-10519 04

HARDWARE

Holding fixture for variable-contour parts
 MSC-16270 B78-10429 08

HARNESSES

Spring control of wire harness loops
 MSC-18246 B78-10411 07

HAZARDS

Predicting damage from exploding vessels
 LEWIS-13042 B78-10258 06
 Simulator for training remote-manipulator operators
 MSC-14921 B78-10415 07

HEARING

Implantable digital hearing aid
 KSC-11009 B78-10373 05

HEART

Improved myocardium transducer
 NPO-14107 B78-10372 05

HEART DISEASES

Noncontacting electrokinetography system
 MSC-18162 B78-10533 05

HEART FUNCTION

Hand-held vital-signals monitor
 MSC-18232 B78-10524 05
 Hybrid ECG signal conditioner
 MSC-18230 B78-10526 05

HEART RATE

Microprocessor-based cardiopulmonary monitor
 MSC-18235 B78-10369 05
 Hybrid heart/breath-rate processor
 MSC-18227 B78-10528 05

HEAT BALANCE

Thermal compensator for helium refrigerators
 GSFC-12168 B78-10082 06

HEAT EXCHANGERS

Passive heat exchanger for solar heating
 M-FS-23914 B78-10197 03
 Protective coating for copper in aluminum heat exchangers
 M-FS-19334 B78-10286 08

HEAT FLUX

Predicting surface heat flux
 MSC-16095 B78-10090 06
 Estimating regional heat flux from scanning radiometer data
 LANGLEY-12158 B78-10329 03

HEAT PIPES

Flat-plate heat pipe
 GSFC-11998 B78-10035 03
 Modular heat-pipe-radiator panel
 MSC-16625 B78-10328 03
 Improved heat-pipe wick
 NPO-13391 B78-10381 06

HEAT PUMPS

Practical and efficient magnetic heat pump
 LEWIS-12508 B78-10170 03

HEAT RADIATORS

Flat-plate heat pipe
 GSFC-11998 B78-10035 03
 Inspection of adhesive-bonded radiators
 MSC-18062 B78-10125 08
 Modular heat-pipe-radiator panel
 MSC-16625 B78-10328 03
 Breather cloth for vacuum curing
 MSC-18063 B78-10440 08

HEAT RESISTANT ALLOYS

Wrought nickel-base superalloy
 LEWIS-12844 B78-10045 04
 A sharp knife for high temperatures
 MSC-16932 B78-10278 07

HEAT SHIELDING

Coated-felt thermal insulation
 MSC-12737 B78-10510 04
 Metallic thermal seal
 MSC-18135 B78-10566 07
 Contouring pile-brush seals
 MSC-16231 B78-10588 08

HEAT SOURCES

Glass tubes for protecting solar cells
 NPO-14200 B78-10031 03

HEAT STORAGE

Glass tubes for protecting solar cells
 NPO-14200 B78-10031 03

HEAT TRANSFER

Flat-plate heat pipe
 GSFC-11998 B78-10035 03
 Modular heat-pipe-radiator panel
 MSC-16625 B78-10328 03
 Zone-refining encapsulated semiconductors
 M-FS-23902 B78-10351 04
 Convectively cooled structures
 LANGLEY-12347 B78-10404 06
 Infrared scanners detect thermal gradients in building walls
 LANGLEY-12157 B78-10480 03
 Easily installed insulation for steamfittings
 MSC-18277 B78-10589 08

HEAT TREATMENT

Processing high-strength steel alloys
 MSC-16172 B78-10441 08

HEATING

Prototype residential solar-energy system
 M-FS-23932 B78-10191 03
 Prototype residential solar-energy system-engineering analysis
 M-FS-23929 B78-10192 03
 Residential solar-heating system - design brochure
 M-FS-23933 B78-10193 03

HEATING EQUIPMENT

Prototype solar-heating system
 M-FS-23916 B78-10180 03
 Residential solar-heating system
 M-FS-23909 B78-10181 03
 Multichannel temperature control for solar heating
 M-FS-23775 B78-10182 03

Prototype residential solar-energy system
M-FS-23932 878-10191 03
Prototype residential solar-energy system-engineering analysis
M-FS-23929 878-10192 03
Residential solar-heating system - design brochure
M-FS-23933 878-10193 03
Prototype solar-heating system-engineering analysis
M-FS-23910 878-10194 03
Prototype solar-heating system - installation manual
M-FS-23907 878-10195 03
Solar-heating module
M-FS-23925 878-10196 03
Passive heat exchanger for solar heating
M-FS-23914 878-10197 03
Passive heat exchanger - installation package
M-FS-23930 878-10198 03
Pump efficiency in solar-energy systems
M-FS-23934 878-10213 03
Protective coating for copper in aluminum heat exchangers
M-FS-19334 878-10286 08
Solar-powered hot-water system
NPO-14270 878-10324 03
Problems encountered in solar heating and cooling systems
M-FS-23974 878-10331 03
Prototype solar-heating system design package
M-FS-23945 878-10332 03
Prototype residential solar-energy system-design package
M-FS-23953 878-10333 03
Prototype residential solar-energy system-installation package
M-FS-23956 878-10334 03
Hot-air flat-plate solar collector-design package
M-FS-23941 878-10335 03
Evaluation of an air solar collector
M-FS-23978 878-10336 03
Indoor tests of a hot-air solar collector
M-FS-23954 878-10337 03
Performance evaluation of an air solar collector
M-FS-23968 878-10338 03
Outdoor tests of a liquid solar collector
M-FS-23969 878-10339 03
Solar-powered hot-air system
M-FS-23976 878-10481 03
Solar-heating system design data brochure
M-FS-23977 878-10492 03
Solar-heating system performance tests
M-FS-25021 878-10493 03
Solar-heating system
M-FS-25022 878-10494 03
Solar hot-water system
M-FS-25043 878-10495 03
Residential solar-heating system-design package
M-FS-25071 878-10496 03
Development and testing of a hot-air solar collector
M-FS-23997 878-10497 03
Design and installation of a flat-plate solar collector
M-FS-25010 878-10498 03
Liquid solar collector-performance tests
M-FS-25082 878-10499 03

Concentrating solar collector-installation package
M-FS-25068 878-10500 03
Corrosion inhibitors for solar-heating and cooling
M-FS-25023 878-10501 03
Easily installed insulation for steamfittings
MSC-18277 878-10589 08
HELICAL ANTENNAS
Compact antenna has symmetrical radiation pattern
ARC-11189 878-10473 02
HELICOPTER CONTROL
Helicopter position stabilizing system
LANGLEY-11670 878-10256 06
HELICOPTERS
Predicting rotor rotation noise
LANGLEY-12098 878-10406 06
HELIUM
Thermal compensator for helium refrigerators
GSFC-12168 878-10082 06
HEMOCYTES
Controlled freezing of biological samples
GSFC-12173 878-10065 05
HEMOGLOBIN
Automated chromosome analysis
NPO-13913 878-10364 05
HERMETIC SEALS
Transmitting rotary motion at an angle
MSC-19483 878-10561 07
HIGH PRESSURE
High-pressure cryogenic cylinder seal
M-FS-19335 878-10421 07
HIGH PRESSURE OXYGEN
Topping pressure for gas-storage cylinders
MSC-18186 878-10542 06
HIGH STRENGTH
Ultra-high-strength boron fibers
LEWIS-12739 878-10051 04
HIGH STRENGTH STEELS
Processing high-strength steel alloys
MSC-16172 878-10441 08
HIGH TEMPERATURE
High-temperature brazing of stainless steel
MSC-19459 878-10112 08
High-temperature waterproofing for tiles
MSC-16773 878-10135 08
A sharp knife for high temperatures
MSC-16932 878-10278 07
High-temperature capacitive pressure transducer
LEWIS-13078 878-10398 06
HIGH TEMPERATURE AIR
Indoor tests of a hot-air solar collector
M-FS-23954 878-10337 03
Solar-powered hot-air system
M-FS-23976 878-10481 03
Solar-heating system
M-FS-25022 878-10494 03
Residential solar-heating system-design package
M-FS-25071 878-10496 03
Development and testing of a hot-air solar collector
M-FS-23997 878-10497 03
Development and testing of a hot-air solar collector
M-FS-23997 878-10497 03
HIGH TEMPERATURE FLUIDS
Wide-temperature corrosion-resistant pressure regulator
NPO-13776 878-10274 07

HIGH TEMPERATURE GASES
Thermocouples measure very-hot gas temperatures
LEWIS-12843 878-10076 06
HIGH TEMPERATURE TESTS
Temperature-gradient oven
M-FS-23919 878-10390 06
HIGH VOLTAGES
Low partial discharge vacuum feedthrough
GSFC-12347 878-10559 07
HINGES
Rigid coupling is also flexible
MSC-16488 878-10098 07
'Nonfloating' universal joint
MSC-19546 878-10108 07
HISTOGRAMS
Multidimensional histograms
M-FS-23855 878-10503 03
HOLDERS
Tile-bonding tool
KSC-11053 878-10134 08
Gentle support stands for fluid-line mockups
MSC-16479 878-10291 08
Quick locking/unlocking retainer
MSC-18048 878-10408 07
Holding fixture for variable-contour parts
MSC-16270 878-10429 08
'Gentle' holder for brittle ceramics
MSC-19645 878-10552 06
Fastener for thermal insulation blankets
MSC-18253 878-10571 07
HOLOGRAPHY
Measuring surface displacements optically
M-FS-23861 878-10321 03
HONEYCOMB CORES
Brazed boron-silicon carbide/aluminum structural panels
LANGLEY-12244 878-10221 04
Fire-retardant lightweight composite
ARC-10918 878-10355 04
HONEYCOMB STRUCTURES
Inspection of adhesive-bonded radiators
MSC-18062 878-10125 08
Fire-retardant lightweight composite
ARC-10918 878-10355 04
Heat resistant nontoxic laminate
ARC-11040 878-10356 04
Detecting moisture in composite honeycomb panels
MSC-16750 878-10550 06
HORIZONTAL TAIL SURFACES
WAKE and WASH
LANGLEY-12262 878-10093 06
HOSES
Lines, bellows, flexible hoses, and filters
LEWIS-13077 878-10424 07
HOUSINGS
Housing protects laser in vacuum
GSFC-12241 878-10028 03
Safe venting for electronic components
MSC-18007 878-10155 01
HYBRID CIRCUITS
Reclaiming hybrid integrated circuits
MSC-16463 878-10129 08
Control of dielectric film deposition
LEWIS-13092 878-10430 08
Miniature Ku-Band down converter
MSC-18313 878-10450 01
Eliminating gold migration in microcircuits
MSC-18213 878-10462 01

- Hand-held vital-signals monitor
MSC-18232 B78-10524 05
Hybrid temperature-monitoring circuit
MSC-18231 B78-10525 05
Hybrid ECG signal conditioner
MSC-18230 B78-10526 05
Hybrid LCD driver
MSC-18229 B78-10529 05
Hybrid clock generator
MSC-18228 B78-10530 05
Accelerated hybrid-circuit production
MSC-18272 B78-10585 08
- HYBRID PROPULSION**
Electric and hybrid vehicles
LEWIS-13077 B78-10423 07
- HYDRATES**
Fire-and smoke-retardant polyesters and elastomers
NPO-14053 B78-10058 04
- HYDRAULIC EQUIPMENT**
Hydraulic dynamic analysis
MSC-16795 B78-10095 06
Precision fluid-pressure regulator
NPO-13370 B78-10106 07
Thermal hydraulic analyzer
MSC-18014 B78-10265 06
Subminiature hydraulic actuator
LANGLEY-11522 B78-10269 07
Detecting servo failures with software
FRC-11003 B78-10396 06
Stable hydraulic pressure regulator
LEWIS-13058 B78-10417 07
Low-leakage low-temperature valve
MSC-18087 B78-10420 07
- HYDRAZINES**
Pressure-sensitive glass reaction cell
LANGLEY-11256 B78-10223 04
Wide-temperature corrosion-resistant pressure regulator
NPO-13776 B78-10274 07
- HYDROCARBON FUELS**
Hydrogen enrichment of synthetic fuel
M-FS-23279 B78-10039 04
Coal liquefaction to increase jet fuel production
LANGLEY-12038 B78-10343 04
Coal mining with a liquid solvent
NPO-14028 B78-10345 04
- HYDRODYNAMICS**
Self-centering stepped piston
LEWIS-12997 B78-10101 07
- HYDROGEN**
Embrittlement proof nickel-alloy bellows
M-FS-19331 B78-10349 04
Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07
Hydrogen-maser frequency standard
GSFC-12334 B78-10490 03
- HYDROGEN EMBRITTLEMENT**
Hydrogen embrittlement of nickel
ARC-10966 B78-10231 04
- HYDROGEN FUELS**
Hydrogen enrichment of synthetic fuel
M-FS-23279 B78-10039 04
Electrolysis cell stimulation
LEWIS-12740 B78-10179 03
- HYDROGEN PEROXIDE**
Chemiluminescence and bioluminescence microbe detection
MSC-16779 B78-10237 05
- HYDROMETERS**
Long-lasting solid-polymer electrolytic hygrometer
NPO-13948 B78-10086 06
- HYPERSONIC AIRCRAFT**
Convectively cooled structures
LANGLEY-12347 B78-10404 06
- HYPERSONIC BOUNDARY LAYER**
Improved electron-beam probe for hypersonic flows
NPO-13793 B78-10254 06
- HYPERSONIC FLOW**
Improved electron-beam probe for hypersonic flows
NPO-13793 B78-10254 06
- HYPERSONICS**
Shock-swallowing air sensor
FRC-10107 B78-10537 06
- HYSTERESIS**
One-third selection for matrix-addressing ferroelectrics
LANGLEY-11993 B78-10456 01
- I
- IGNITERS**
Plasma igniter for internal-combustion engines
NPO-13828 B78-10100 07
- IGNITION**
Fire-resistant wood composites
ARC-11174 B78-10508 04
Real-time instrument averages 100 data sets
LEWIS-13093 B78-10534 06
- IGNITION SYSTEMS**
Plasma igniter for internal-combustion engines
NPO-13828 B78-10100 07
- ILLUMINATING**
System for monitoring lightning strikes
KSC-11018 B78-10475 02
- IMAGE CONVERTERS**
Video method for studying optical fields
M-FS-23103 B78-10036 03
- IMAGE CORRELATORS**
Measuring surface displacements optically
M-FS-23861 B78-10321 03
- IMAGE ENHANCEMENT**
Film adhesive enhances neutron radiographic images
MSC-18061 B78-10081 06
Postprocessing classification images
MSC-18238 B78-10601 09
- IMAGE INTENSIFIERS**
Low-intensity x-ray and gamma-ray imaging device
GSFC-12263 B78-10061 05
- IMAGERY**
Data reformatting with less hardware
NPO-13676 B78-10470 02
Multidimensional histograms
M-FS-23855 B78-10503 03
- IMAGES**
Signal-interleaving device
GSFC-12111 B78-10319 03
- IMAGING TECHNIQUES**
Low-intensity x-ray and gamma-ray imaging device
GSFC-12263 B78-10061 05
Processing multispectral signals from a discrete-sensor array
NPO-14211 B78-10442 09
Acoustic-optical imaging without immersion
M-FS-23876 B78-10549 06
- Automated control of crystal growth
NPO-14420 B78-10582 08
Predicting crop production from satellite data
GSFC-12379 B78-10595 09
- IMIDES**
Polyimide adhesives for titanium and composite bonding
LANGLEY-12257 B78-10040 04
Improved imide polymerization catalyst
ARC-11107 B78-10517 04
- IMMUNOLOGY**
Fluorescent microspheres
NPO-13946 B78-10068 05
- IMPACT**
Shock during PIND test frees particles
M-FS-23829 B78-10389 06
- IMPACT RESISTANCE**
Partial interlaminar separation for composites
LANGLEY-12065 B78-10052 04
Abrasion-resistant antireflective coating for polycarbonate
ARC-11047 B78-10054 04
- IMPLANTATION**
Biocompatibility of surgical implants
NPO-14291 B78-10368 05
Implantable digital hearing aid
KSC-11009 B78-10373 05
- IMPLANTED ELECTRODES (BIOLOGY)**
Biomedical applications of ion-beam technology
LEWIS-12807 B78-10363 05
Improved myocardium transducer
NPO-14107 B78-10372 05
- IMPREGNATING**
Repairing silicon carbide coatings
MSC-18033 B78-10226 04
- IMPURITIES**
Multiple-sample holder for IC testing
NPO-14314 B78-10540 06
- IN-FLIGHT MONITORING**
Microprocessor-based cardiopulmonary monitor
MSC-18235 B78-10369 05
- INCOMPRESSIBLE FLOW**
Potential flows in propulsion system inlets
LEWIS-13010 B78-10553 06
- INCOMPRESSIBLE FLUIDS**
Self-centering stepped piston
LEWIS-12997 B78-10101 07
- INCONEL (TRADEMARK)**
Two braze alloys for thin-wall components
M-FS-19206 B78-10117 08
- INDEXES (DOCUMENTATION)**
Directory of fire research specialists
LEWIS-13123 B78-10399 06
- INDEXES (RATIOS)**
Performance optimizing
LANGLEY-11930 B78-10096 06
- INDICATING INSTRUMENTS**
Noncontacting valve-position indicator
MSC-16048 B78-10412 07
'Blind' position indicator
MSC-16972 B78-10570 07
- INDUCTION MOTORS**
Three-phase induction motors
MSC-16904 B78-10281 07
- INDUSTRIAL SAFETY**
High-pressure liquid chromatography of aromatic amines
LANGLEY-12163 B78-10515 04
- INERTIAL GUIDANCE**
Optical gyroscope
NPO-14258 B78-10176 03

INFLATABLE STRUCTURES

Tile-bonding tool
KSC-11053 B78-10134 08

INFORMATION RETRIEVAL
Multiple-input land-use system concept
NPO-13903 B78-10018 02
Noise tolerant computer link
NPO-14152 B78-10160 02
Medical Information Management System
GSFC-12078 B78-10376 05

INFORMATION THEORY
Eliminating ambiguity in digital signals
NPO-14289 B78-10469 02

INFRARED DETECTORS
Infrared scanners detect thermal gradients in building walls
LANGLEY-12157 B78-10480 03
Instrument measures many optical properties in visible and IR
LANGLEY-12285 B78-10489 03

INFRARED IMAGERY
Infrared-enhanced TV for fire detection
M-FS-19380 B78-10172 03

INFRARED LASERS
Common-cavity pumped laser
GSFC-12237 B78-10320 03

INFRARED SCANNERS
Infrared scanners for temperature measurement in wind tunnels
LANGLEY-12171 B78-10077 06
Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 B78-10085 06
Infrared-enhanced TV for fire detection
M-FS-19380 B78-10172 03
Estimating regional heat flux from scanning radiometer data
LANGLEY-12158 B78-10329 03

INFRARED SPECTROMETERS
Automatic gain-balancing circuit
LANGLEY-12074 B78-10297 01

INFRARED SPECTROSCOPY
Thermal compensator for helium refrigerators
GSFC-12168 B78-10082 06

INGOTS
Controlling the growth of silicon sheets
NPO-14295 B78-10581 08

INHIBITORS
Corrosion inhibitors for solar heating and cooling systems
M-FS-23892 B78-10209 03
Corrosion inhibitors for solar-heating and cooling
M-FS-25023 B78-10501 03

INJECTION LASERS
Protective coating for laser diodes
LANGLEY-11746 B78-10171 03

INOCULATION
Automated electrochemical selection of coliforms
MSC-16777 B78-10236 05

INORGANIC COATINGS
Boron trifluoride coatings for plastics
ARC-11057 B78-10043 04
Protective coating for copper in aluminum heat exchangers
M-FS-19334 B78-10286 08

INORGANIC PEROXIDES
High-yield process for preparing calcium superoxide
ARC-11053 B78-10216 04
Economical synthesis of potassium superoxide
ARC-10992 B78-10353 04

INSPECTION

Window flaw detection by backscatter lighting
MSC-16605 B78-10089 06
Inspection of adhesive-bonded radiators
MSC-18062 B78-10125 08
Reclaiming hybrid integrated circuits
MSC-16463 B78-10129 08
Portable fluorescent-dye inspection device
M-FS-24019 B78-10139 08
Automated inspection of wire-frame assemblies
GSFC-12321 B78-10546 06
Detecting moisture in composite honeycomb panels
MSC-16750 B78-10550 06

INSTALLATION MANUALS

Prototype solar-heating system - installation manual
M-FS-23907 B78-10195 03
Passive heat exchanger - installation package
M-FS-23930 B78-10198 03
Flat-plate solar collector - installation package
M-FS-23921 B78-10200 03

INSTALLING

Prototype solar-heating system - installation manual
M-FS-23907 B78-10195 03
Passive heat exchanger - installation package
M-FS-23930 B78-10198 03
Flat-plate solar collector - installation package
M-FS-23921 B78-10200 03
Spares-optimized model
MSC-18015 B78-10446 09
Concentrating solar collector-installation package
M-FS-25068 B78-10500 03
Accelerated hybrid-circuit production
MSC-18272 B78-10585 08

INSTRUMENT ERRORS

Mass spectrometer calibration standard
NPO-14097 B78-10249 06

INSTRUMENT ORIENTATION

Laser beam assists in precision welding
M-FS-19319 B78-10122 08

INSULATION

High-temperature waterproofing for tiles
MSC-16773 B78-10135 08
Special weave for insulating fabrics
MSC-16380 B78-10288 08
Installing fiber insulation in tight spaces
MSC-16934 B78-10289 08
Insulator for cryogenic joints
M-FS-19361 B78-10419 07
Fastener for thermal insulation blankets
MSC-18253 B78-10571 07
Contouring pile-brush seals
MSC-16231 B78-10588 08
Easily installed insulation for steamfittings
MSC-18277 B78-10589 08

INSULIN

Boosting production yield of biomedical peptides
NPO-14142 B78-10240 05

INTEGRATED CIRCUITS

Automated tester for MOS devices
NPO-14088 B78-10001 01
Measuring oxide trapping parameters in MOS structure
NPO-14120 B78-10002 01

S-Band complex-weight module for adaptive processing
LANGLEY-12197 B78-10005 01
Curve tracer checks CMOS IC's
GSFC-12209 B78-10007 01
Simple tool removes IC flat packs
MSC-16058 B78-10010 01
CMOS bulk-metal design handbook
M-FS-23856 B78-10142 08
IC implementation of crossbar switches
NPO-13837 B78-10153 01
Analyzing CMOS/SOS fabrication for LSI arrays
M-FS-23788 B78-10158 01
Microcircuit-cleaning machine
MSC-16060 B78-10292 08
CMOS-array design-automation techniques
M-FS-23762 B78-10311 01
Shock during PIND test frees particles
M-FS-23829 B78-10389 06
Testing integrated circuits by photoexcitation
M-FS-23943 B78-10451 01
Eliminating gold migration in microcircuits
MSC-18213 B78-10462 01
Multiple-sample holder for IC testing
NPO-14314 B78-10540 06
SEM probe of IC radiation sensitivity
NPO-14350 B78-10541 06
Accelerated hybrid-circuit production
MSC-18272 B78-10585 08
All-ion-implantation process for integrated circuits
M-FS-23995 B78-10590 08
Sealing microcircuits with adhesives
M-FS-23869 B78-10592 08

INTEGRATORS

Voice-output solar energy reporter
LEWIS-12947 B78-10022 02
Inexpensive, portable, integrating solar energy meter
LEWIS-12804 B78-10188 03

INTEGRITY

Low-cost ultrasonic lamb-wave transducer
MSC-16333 B78-10072 06

INTERFACES

Computer interface for mechanical arm
M-FS-23849 B78-10015 02
28-Bit serial word simulator/monitor
MSC-16418 B78-10315 02

INTERFACIAL TENSION

Biocompatibility of surgical implants
NPO-14291 B78-10368 05

INTERFEROMETERS

Video method for studying optical fields
M-FS-23103 B78-10036 03
Improved double-pass michelson interferometer
NPO-13999 B78-10177 03
Improved fourier interference spectrometer
NPO-14025 B78-10485 03
Improved servo for a michaelson interferometer
NPO-14093 B78-10488 03

INTERLAYERS

Void-free bends in laminated structures
MSC-16998 B78-10285 08

INTERMEDIATE FREQUENCIES

Automatic acquisition and ranging system
NPO-13982 B78-10312 02

INTERNAL COMBUSTION ENGINES

- Plasma igniter for internal-combustion engines
 NPO-13828 B78-10100 07
 Boosting the power of two-stage engines
 NPO-14057 B78-10105 07
 Real-time instrument averages 100 data sets
 LEWIS-13093 B78-10534 06

INTERNAL PRESSURE

- Pneumatic servomechanisms
 M-FS-23295 B78-10144 08

INTERRUPTION

- Automatic circuit interrupter
 MSC-16697 B78-10300 01

INTESTINES

- Improved probe for rectal-cancer detection
 NPO-14247 B78-10531 05
 Self-propelling, self-locating colonoscope
 NPO-14092 B78-10532 05

INTRAOCULAR PRESSURE

- Flow-compensating pressure regulator
 LEWIS-12718 B78-10522 05

INVENTORY MANAGEMENT

- Spares-optimized model
 MSC-18015 B78-10446 09
 Computation of spare parts requirements
 MSC-16872 B78-10593 09

INVERTED CONVERTERS (DC TO AC)

- Overload protection system
 NPO-13872 B78-10460 01
 Load balancing multimodule switching power converters
 NPO-13832 B78-10461 01

INVERTERS

- Gate-assisted turn-off thyristor
 LEWIS-12535 B78-10004 01
 Automatic load sharing in inverter modules
 NPO-14056 B78-10302 01
 Signal-interleaving device
 GSFC-12111 B78-10319 03

ION BEAMS

- Ion-beam texturing of materials
 LEWIS-12996 B78-10357 04
 Biomedical applications of ion-beam technology
 LEWIS-12807 B78-10363 05
 Ion-beam-textured graphite
 LEWIS-12724 B78-10506 04

ION EXCHANGE MEMBRANE**ELECTROLYTES**

- Forming 'dynamic' membranes on stainless steel
 MSC-18172 B78-10513 04

ION IMPLANTATION

- All-ion-implantation process for integrated circuits
 M-FS-23995 B78-10590 08

IRON ALLOYS

- Two braze alloys for thin-wall components
 M-FS-19206 B78-10117 08

IRON COMPOUNDS

- Coal desulfurization with iron pentacarbonyl
 NPO-14272 B78-10342 04

IRRADIANCE

- Terrestrial photovoltaic measurements
 LEWIS-13057 B78-10310 01

ISOLATORS

- Coaxial isolator has versatile interface
 MSC-16908 B78-10009 01

ISOMERS

- High-pressure liquid chromatography of aromatic amines
 LANGLEY-12163 B78-10515 04

J**JACKETS**

- Easily installed insulation for steamfittings
 MSC-18277 B78-10589 08

JET AIRCRAFT

- Convectively cooled structures
 LANGLEY-12347 B78-10404 06

JET ENGINE FUELS

- Coal liquefaction to increase jet fuel production
 LANGLEY-12038 B78-10343 04

JET ENGINES

- Oxygen and nitrogen raman spectra
 LEWIS-12849 B78-10361 04
 Nacelle incremental drag
 LEWIS-12786 B78-10400 06

JIGS

- Welding fixture for thin metal parts
 GSFC-12318 B78-10428 08
 'Gentle' holder for brittle ceramics
 MSC-19645 B78-10552 06

JOINTS (JUNCTIONS)

- Rigid coupling is also flexible
 MSC-16488 B78-10098 07
 'Nonfloating' universal joint
 MSC-19546 B78-10108 07
 Quick-connect threaded attachment joint
 LANGLEY-12232 B78-10414 07
 Insulator for cryogenic joints
 M-FS-19361 B78-10419 07

K**KOVAR (TRADEMARK)**

- Bonding Kovar pins to an alumina substrate
 MSC-16828 B78-10130 08

L**LABORATORY EQUIPMENT**

- Improvements in microelectrophoresis apparatus
 ARC-11121 B78-10247 05
 Retainer for laboratory animals
 LANGLEY-12353 B78-10371 05

LAMB WAVES

- Low-cost ultrasonic lamb-wave transducer
 MSC-16333 B78-10072 06

LAMINATES

- Polyimide adhesives for titanium and composite bonding
 LANGLEY-12257 B78-10040 04
 Partial interlaminar separation for composites
 LANGLEY-12065 B78-10052 04
 Ultrasonic evaluation of high-voltage circuit boards
 LEWIS-12781 B78-10087 06
 Friction of thick laminates
 LANGLEY-12010 B78-10284 08
 Void-free bends in laminated structures
 MSC-16998 B78-10285 08

- Fire-retardant lightweight composite
 ARC-10918 B78-10355 04
 Heat resistant nontoxic laminate
 ARC-11040 B78-10356 04
 Low-cost graphite/epoxy structural panels
 M-FS-23871 B78-10427 08

LAND USE

- Multiple-input land-use system concept
 NPO-13903 B78-10018 02

LANDING AIDS

- Air cushion landing system
 LANGLEY-12303 B78-10259 06

LANDING SIMULATION

- Approach and landing simulation
 LANGLEY-12060 B78-10091 06

LANDSAT SATELLITES

- Predicting crop production from satellite data
 GSFC-12379 B78-10595 09
 Postprocessing classification images
 MSC-18238 B78-10601 09

LARGE SCALE INTEGRATION

- CMOS bulk-metal design handbook
 M-FS-23856 B78-10142 08
 Analyzing CMOS/SOS fabrication for LSI arrays
 M-FS-23788 B78-10158 01

LASER APPLICATIONS

- Laser wire stripping
 MSC-18000 B78-10118 08
 Laser beam assists in precision welding
 M-FS-19319 B78-10122 08
 Improved 'spectrophone'
 NPO-14143 B78-10167 03
 Optical gyroscope
 NPO-14258 B78-10176 03
 Measuring surface displacements optically
 M-FS-23861 B78-10321 03
 Acoustic-optical imaging without immersion
 M-FS-23876 B78-10549 06

LASER CAVITIES

- Common-cavity pumped laser
 GSFC-12237 B78-10320 03

LASER DOPPLER VELOCIMETERS

- Directional laser velocimeter with doppler velocity simulator
 LANGLEY-12176 B78-10029 03
 In vivo blood-flow mapping
 NPO-14133 B78-10244 05
 'Pseudobackscatter' laser velocimeter
 ARC-10970 B78-10318 03
 Miniature velocimeter
 LANGLEY-12281 B78-10539 06

LASER HEATING

- Thermal compensator for helium refrigerators
 GSFC-12168 B78-10082 06
 Laser wire stripping
 MSC-18000 B78-10118 08

LASER OUTPUTS

- Laser beam color separator
 LANGLEY-11806 B78-10174 03

LASER RANGE FINDERS

- Self-navigating robot
 NPO-14190 B78-10026 02

LASERS

- Housing protects laser in vacuum
 GSFC-12241 B78-10028 03
 Common-cavity pumped laser
 GSFC-12237 B78-10320 03
 Vacuum-ultraviolet laser uses superfluid helium
 NPO-13993 B78-10323 03

- Low-power tuner for lasers
M-FS-23863 B78-10486 03
- LATCHES**
Dual-action expanded-latch mechanism
M-FS-23557 B78-10277 07
Coupler for moving vehicles
GSFC-12322 B78-10407 07
Combined hinge and latch
MSC-19602 B78-10572 07
- LATEX**
Fast-drying coating
MSC-16056 B78-10060 04
Chemical agent boosts natural-rubber output
NPO-14185 B78-10358 04
- LEAKAGE**
Rapid leak detection with liquid crystals
MSC-13804 B78-10084 06
Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 B78-10085 06
Self-centering stepped piston
LEWIS-12997 B78-10101 07
Damage-detection system for LNG carriers
LANGLEY-11463 B78-10250 06
- LEARNING MACHINES**
Self-navigating robot
NPO-14190 B78-10026 02
- LEAST SQUARES METHOD**
A parameter-estimation subroutine package
NPO-14263 B78-10447 09
- LENSES**
Noncontact measurement of angular deflection
LANGLEY-12178 B78-10071 06
Cosine-corrected optical diffuser
NPO-14288 B78-10322 03
Scratch resistant plastic lenses
ARC-11039 B78-10519 04
- LEUKEMIAS**
Body/bone-marrow differential-temperature sensor
NPO-14121 B78-10066 05
- LIFE SUPPORT SYSTEMS**
Economical synthesis of potassium superoxide
ARC-10992 B78-10353 04
- LIFT**
Wing aerodynamics under blowing jets
LANGLEY-12256 B78-10401 06
- LIGHT AIRCRAFT**
WAKE and WASH
LANGLEY-12262 B78-10093 06
- LIGHT BEAMS**
Fluorescent paint simplifies laser-beam alignment
LEWIS-12571 B78-10030 03
Noncontact optical communication between moving stations
LANGLEY-12283 B78-10377 06
- LIGHT EMITTING DIODES**
Protective coating for laser diodes
LANGLEY-11746 B78-10171 03
- LIGHT MODULATION**
Modulation improves electro-optic object detector
M-FS-23776 B78-10380 06
- LIGHT SOURCES**
Noncontact measurement of angular deflection
LANGLEY-12178 B78-10071 06
Portable fluorescent-dye inspection device
M-FS-24019 B78-10139 08
- Common-cavity pumped laser
GSFC-12237 B78-10320 03
- LIGHT TRANSMISSION**
Improved optical filter
GSFC-12225 B78-10027 03
Optics for natural lighting
LANGLEY-12333 B78-10189 03
Signal-interleaving device
GSFC-12111 B78-10319 03
Compact turbidity meter
KSC-11063 B78-10545 06
- LIGHTING EQUIPMENT**
Custom blending of lamp phosphors
MSC-16692 B78-10056 04
- LIMITER CIRCUITS**
Overload protection system
NPO-13872 B78-10460 01
- LINEAR PROGRAMMING**
Performance optimizing
LANGLEY-11930 B78-10096 06
- LINEAR SYSTEMS**
Algorithms for linear-systems control
LANGLEY-12313 B78-10443 09
- LINING PROCESSES**
Installing fiber insulation in tight spaces
MSC-16934 B78-10289 08
- LINKAGES**
Dual-action expanded-latch mechanism
M-FS-23557 B78-10277 07
Coupler for moving vehicles
GSFC-12322 B78-10407 07
- LIQUID AMMONIA**
Compatibility of Au-Cu-Ni braze alloy with NH₃
MSC-16864 B78-10219 04
- LIQUID COOLING**
Automated controller for liquid-cooled garments
MSC-18055 B78-10365 05
- LIQUID CRYSTALS**
Hybrid LCD driver
MSC-18229 B78-10529 05
- LIQUID HELIUM**
Vacuum-ultraviolet laser uses superfluid helium
NPO-13993 B78-10323 03
- LIQUID INJECTION**
High-rise foam-in-place process
MSC-16931 B78-10128 08
- LIQUID METALS**
Ladle for pouring hot melt
MSC-16974 B78-10137 08
Interactive data-processing system for metallurgy
M-FS-23774 B78-10217 04
- LISTS**
Directory of fire research specialists
LEWIS-13123 B78-10399 06
- LITHIUM CHLORIDES**
Chemical measurement of urine volume
MSC-16585 B78-10238 05
- LOAD DISTRIBUTION (FORCES)**
Plotting max/min data envelopes
MSC-18016 B78-10597 09
- LOAD TESTS**
'Gentle' holder for brittle ceramics
MSC-19645 B78-10552 06
- LOADS (FORCES)**
Combination force and angular-deflection indicator
MSC-16155 B78-10070 06
Resizing algorithm for loaded structures
LANGLEY-12064 B78-10594 09
- LOCKING**
Quick locking/unlocking retainer
MSC-18048 B78-10408 07
- Antibackoff lock for nuts and bolts
MSC-16472 B78-10409 07
- LOCKS (FASTENERS)**
Combined hinge and latch
MSC-19602 B78-10572 07
- LOGIC CIRCUITS**
CMOS bulk-metal design handbook
M-FS-23856 B78-10142 08
IC implementation of crossbar switches
NPO-13837 B78-10153 01
Signal-interleaving device
GSFC-12111 B78-10319 03
- LOGIC DESIGN**
CMOS bulk-metal design handbook
M-FS-23856 B78-10142 08
CMOS-array design-automation techniques
M-FS-23762 B78-10311 01
Representation of multivalued logic functions
NPO-13760 B78-10596 09
- LOW COST**
Low-cost ultrasonic lamb-wave transducer
MSC-16333 B78-10072 06
- LOW DENSITY MATERIALS**
Match-mold process for foam insulation
MSC-16631 B78-10126 08
- LOW FREQUENCIES**
Airframe design for reducing cabin noise
LANGLEY-12097 B78-10257 06
- LOW TEMPERATURE**
Practical and efficient magnetic heat pump
LEWIS-12508 B78-10170 03
- LOW TEMPERATURE BRAZING**
Compatibility of Au-Cu-Ni braze alloy with NH₃
MSC-16864 B78-10219 04
- LOW TEMPERATURE TESTS**
Bonding Kovar pins to an alumina substrate
MSC-16828 B78-10130 08
Mechanical properties of 18-2 Mn stainless steel
M-FS-23843 B78-10229 04
Nitronic 60: a new alloy
M-FS-23844 B78-10230 04
Thermoelectrically-cooled erature probe
MSC-18192 B78-10484 03
- LUBRICATION**
Dynamics of gas-thrust bearings
LEWIS-12754 B78-10097 06
- LUMENS**
A probe for blood-vessel and spinal interiors
NPO-14132 B78-10242 05
- LUNAR GEOLOGY**
Mounting procedure for geological samples
MSC-18206 B78-10327 03

M

MACH NUMBER

- Shock-swallowing air sensor
FRC-10107 B78-10537 06

MACHINING

- Holding fixture for variable-contour parts
MSC-16270 B78-10429 08
Processing high-strength steel alloys
MSC-16172 B78-10441 08

MAGNETIC CIRCUITS

Bonding core mating surfaces improves transformer
NPO-13855 878-10283 08

MAGNETIC CORES

Improved transformer-winding method
NPO-14243 878-10282 08
Bonding core mating surfaces improves transformer
NPO-13855 878-10283 08

MAGNETIC FILMS

Mossbauer studies of bulk and thin-film FeTe
M-FS-23773 878-10059 04

MAGNETIC TAPES

Detecting and correcting bit errors on magnetic tape
NPO-13842 878-10294 09

MAGNETIC TRANSDUCERS

Noncontacting valve-position indicator
MSC-16048 878-10412 07
Low-power tuner for lasers
M-FS-23863 878-10486 03

MAGNETOMETERS

Two-position wax-motor rotary actuator
GSFC-12521 878-10557 07

MAGNETOSTRICTION

Magnetostrictive valve
NPO-14235 878-10104 07

MAGNETRONS

More efficient microwave-power transmission
NPO-13885 878-10466 02

MAGNIFICATION

Portable fluorescent-dye inspection device
M-FS-24019 878-10139 08

MAINTENANCE

Improved epoxy adhesive with radiographic tracer
MSC-18020 878-10225 04
Repairing silicon carbide coatings
MSC-18033 878-10226 04
Problems encountered in solar heating and cooling systems
M-FS-23974 878-10331 03
Repairing pin-fin cold plates
MSC-16424 878-10431 08
Spares-optimized model
MSC-18015 878-10446 09
Splicing shielded cables
MSC-18297 878-10453 01
Concentrating solar collector-installation package
M-FS-25068 878-10500 03
Localized cooling of electronic components
LANGLEY-11955 878-10569 07
Electroplated 'cold patch' for critical parts
M-FS-19401 878-10584 08
Computation of spare parts requirements
MSC-16872 878-10593 09

MAJORITY CARRIERS

More efficient GaAs solar cells
LANGLEY-12216 878-10479 03

MAN MACHINE SYSTEMS

Self-navigating robot
NPO-14190 878-10026 02

MANAGEMENT INFORMATION SYSTEMS

Processor for the UNIVAC 1100 series
NPO-13469 878-10600 09

MANAGEMENT PLANNING

Price and cost estimation
M-FS-23812 878-10599 09

MANAGEMENT SYSTEMS

Verification of redundancy management design
MSC-16713 878-10145 09

MANIPULATORS

Simulator for training remote-manipulator operators
MSC-14921 878-10415 07

MAPPING

Ocean-wave ray or crest diagrams in shoaling waters
LANGLEY-12380 878-10341 03
Postprocessing classification images
MSC-18238 878-10601 09

MARKING

Fluorescent microspheres
NPO-13946 878-10068 05

MASERS

Ruby c-axis alignment system
NPO-14252 878-10379 06
Hydrogen-maser frequency standard
GSFC-12334 878-10490 03

MASKING

Simplified tooling for spray masking
MSC-16927 878-10136 08

MASS DISTRIBUTION

Rigid 'Sling' for topheavy loads
GSFC-12359 878-10574 07

MASS SPECTROMETERS

Mass spectrometer calibration standard
NPO-14097 878-10249 06

MATCHING

Precise matching of diodes
NPO-14293 878-10452 01

MATERIAL ABSORPTION

Low-background trace-gas detector
NPO-13683 878-10168 03

MATERIALS

A solid-state phase-insensitive ultrasonic transducer
LANGLEY-12304 878-10385 06

MATERIALS HANDLING

Self-sterilizing canister
NPO-14237 878-10064 05
Dual relief-valve system
LANGLEY-12267 878-10111 07
Ladle for pouring hot melt
MSC-16974 878-10137 08
Simulator for training remote-manipulator operators
MSC-14921 878-10415 07
Rigid 'Sling' for topheavy loads
GSFC-12359 878-10574 07

MATHEMATICAL LOGIC

Representation of multivalued logic functions
NPO-13760 878-10596 09

MATHEMATICAL MODELS

Hydraulic dynamic analysis
MSC-16795 878-10095 06
Three-phase induction motors
MSC-16904 878-10281 07

MATRICES (MATHEMATICS)

Processing multispectral signals from a discrete-sensor array
NPO-14211 878-10442 09
Algorithms for linear-systems control
LANGLEY-12313 878-10443 09
A parameter-estimation subroutine package
NPO-14263 878-10447 09

MEASUREMENT

Long-lasting solid-polymer electrolytic hygrometer
NPO-13948 878-10086 06

MEASURING INSTRUMENTS

Measuring surface displacements optically
M-FS-23861 878-10321 03
Sweat collection capsule
ARC-11031 878-10367 05
Measuring poisson's ratio in elastomers
M-FS-23878 878-10387 06
Instrument measures many optical properties in visible and IR
LANGLEY-12285 878-10489 03
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 878-10505 04
Compact turbidity meter
KSC-11063 878-10545 06
Automated inspection of wire-frame assemblies
GSFC-12321 878-10546 06

MECHANICAL DEVICES

Simple tool removes IC flat packs
MSC-16058 878-10010 01
Computer interface for mechanical arm
M-FS-23849 878-10015 02
Compact ratchet wrench
M-FS-24252 878-10273 07
Antibackoff lock for nuts and bolts
MSC-16472 878-10409 07
Holding fixture for variable-contour parts
MSC-16270 878-10429 08
Safe, durable soil sampler
MSC-18171 878-10577 07
Wrench for thin-walled cylinders
LANGLEY-12286 878-10579 07

MECHANICAL DRIVES

Design of transmission shafting
LEWIS-12965 878-10107 07
'Nonfloating' universal joint
MSC-19546 878-10108 07
Dual-action expanded-latch mechanism
M-FS-23557 878-10277 07
Two-position wax-motor rotary actuator
GSFC-12521 878-10557 07
Durable nonslip stainless-steel drivebelts
GSFC-12276 878-10567 07
Two (or more) rotary outputs from one input
MSC-19450 878-10568 07
Gear-tooth fatigue-strength estimates
MSC-18167 878-10573 07

MECHANICAL MEASUREMENT

Quick-and-easy shear-load testing
MSC-16765 878-10073 06

MECHANICAL PROPERTIES

Brazed boron-silicon carbide/aluminum structural panels
LANGLEY-12244 878-10221 04
Response of graphite/epoxy composites to moisture
MSC-16899 878-10228 04
Mechanical properties of 18-2 Mn stainless steel
M-FS-23843 878-10229 04
Nitronic 60: a new alloy
M-FS-23844 878-10230 04
Hydrogen embrittlement of nickel
ARC-10966 878-10231 04
Thermal hydraulic analyzer
MSC-18014 878-10265 06
Measuring poisson's ratio in elastomers
M-FS-23878 878-10387 06
Dynamic measurement of bulk modulus
NPO-13226 878-10543 06
Gear-tooth fatigue-strength estimates
MSC-18167 878-10573 07

MECHANICAL SHOCK

Shock during PIND test frees particles
M-FS-23829 B78-10389 06

MEDICAL ELECTRONICS

Wideband EMG telemetry system
ARC-11209 B78-10375 05
Hand-held vital-signals monitor
MSC-18232 B78-10524 05
Hybrid temperature-monitoring circuit
MSC-18231 B78-10525 05
Hybrid ECG signal conditioner
MSC-18230 B78-10526 05
Hybrid LCD driver
MSC-18229 B78-10529 05
Hybrid clock generator
MSC-18228 B78-10530 05
Noncontacting electrokinetography system
MSC-18162 B78-10533 05

MEDICAL EQUIPMENT

Improvements in microelectrophoresis apparatus
ARC-11121 B78-10247 05
Sweat collection capsule
ARC-11031 B78-10367 05
Implantable digital hearing aid
KSC-11009 B78-10373 05
Hybrid respiration-signal conditioner
MSC-18226 B78-10527 05
Hybrid heart/breath-rate processor
MSC-18227 B78-10528 05
Improved probe for rectal-cancer detection
NPO-14247 B78-10531 05

MEDICAL SCIENCE

Toxic substances handbook
LEWIS-13124 B78-10359 04

MEDICAL SERVICES

Medical Information Management System
GSFC-12078 B78-10376 05

MELTING

Ladle for pouring hot melt
MSC-16974 B78-10137 08

MELTING POINTS

Thermocouples measure very-hot gas temperatures
LEWIS-12843 B78-10076 06

MEMBRANE STRUCTURES

Positively charged membrane for urea dialysis
NPO-14101 B78-10241 05

MEMBRANES

Pressure-sensitive glass reaction cell
LANGLEY-11256 B78-10223 04
Forming 'dynamic' membranes on stainless steel
MSC-18172 B78-10513 04

MERCURY LAMPS

Custom blending of lamp phosphors
MSC-16692 B78-10056 04

MESH

Internal grid for release of brazing retorts
MSC-19472 B78-10114 08

METABOLIC WASTES

Sweat collection capsule
ARC-11031 B78-10367 05

METAL BONDING

Process fabricates flat panels at high temperatures
MSC-16969 B78-10116 08
Two braze alloys for thin-wall components
M-FS-19206 B78-10117 08

Detecting overpenetration of electron-beam welds
M-FS-19396 B78-10586 08

METAL COATINGS

Improved alkali-metal/silicate binders
GSFC-12303 B78-10224 04
Natural-oxide solar-collector coatings
M-FS-23518 B78-10326 03
Embrittlement proof nickel-alloy bellows
M-FS-19331 B78-10349 04
Ion-beam texturing of materials
LEWIS-12996 B78-10357 04
Electroplated 'cold patch' for critical parts
M-FS-19401 B78-10584 08

METAL CRYSTALS

Hydrogen embrittlement of nickel
ARC-10966 B78-10231 04

METAL FILMS

Mossbauer studies of bulk and thin-film FeTe
M-FS-23773 B78-10059 04
Preparing thin aluminum films for adhesive bonding
NPO-14357 B78-10591 08

METAL JOINTS

Reducing weld peaking in aluminum
M-FS-23973 B78-10433 08

METAL OXIDE SEMICONDUCTORS

Automated tester for MOS devices
NPO-14088 B78-10001 01
Measuring oxide trapping parameters in MOS structure
NPO-14120 B78-10002 01
CMOS bulk-metal design handbook
M-FS-23856 B78-10142 08
Analyzing CMOS/SOS fabrication for LSI arrays
M-FS-23788 B78-10158 01
CMOS-array design-automation techniques
M-FS-23762 B78-10311 01
All-ion-implantation process for integrated circuits
M-FS-23995 B78-10590 08

METAL POWDER

Surface examination of small particles
LEWIS-12842 B78-10075 06
Slurry-powder sintering furnace
LANGLEY-11423 B78-10293 08

METAL STRIPS

Human arm may act as antenna
ARC-11195 B78-10161 02

METAL SURFACES

Verifying the fit of mating contoured surfaces
LANGLEY-11731 B78-10290 08
Natural-oxide solar-collector coatings
M-FS-23518 B78-10326 03

METAL WORKING

Improved heat-pipe wick
NPO-13391 B78-10381 06
Processing high-strength steel alloys
MSC-16172 B78-10441 08

METAL-METAL BONDING

Brazing dissimilar aluminum alloys
MSC-16340 B78-10587 08

METALS

Interactive data-processing system for metallurgy
M-FS-23774 B78-10217 04

METHANE

Hydrogen enrichment of synthetic fuel
M-FS-23279 B78-10039 04

MICE

Retainer for laboratory animals
LANGLEY-12353 B78-10371 05

MICHELSON INTERFEROMETERS

Improved double-pass michelson interferometer
NPO-13999 B78-10177 03
Improved fourier interference spectrometer
NPO-14025 B78-10485 03
Improved servo for a michelson interferometer
NPO-14093 B78-10488 03

MICROCRACKS

Pulse-echo probe of rock permeability near oil wells
NPO-14192 B78-10222 04

MICROELECTRONICS

Microstrip backfire antenna
LANGLEY-12172 B78-10019 02
Flicking-wire drag tensioner
MSC-16367 B78-10109 07
CMOS bulk-metal design handbook
M-FS-23856 B78-10142 08
Analyzing CMOS/SOS fabrication for LSI arrays
M-FS-23788 B78-10158 01
Microcircuit-cleaning machine
MSC-16060 B78-10292 08

MICROPARTICLES

Fluorescent microspheres
NPO-13946 B78-10068 05

MICROPHONES

High-temperature microphone system
LANGLEY-12375 B78-10384 06

MICROSCOPES

Automated chromosome analysis
NPO-13913 B78-10364 05

MICROSCOPY

Mounting procedure for geological samples
MSC-18206 B78-10327 03

MICROWAVE ANTENNAS

Efficient rectifying antenna
NPO-13884 B78-10471 02
Compact antenna has symmetrical radiation pattern
ARC-11189 B78-10473 02

MICROWAVE CIRCUITS

S-Band complex-weight module for adaptive processing
LANGLEY-12197 B78-10005 01

MICROWAVE EMISSION

Hydrogen-maser frequency standard
GSFC-12334 B78-10490 03

MICROWAVE EQUIPMENT

Coaxial isolator has versatile interface
MSC-16908 B78-10009 01
Temperature stabilization of microwave ferrite devices
MSC-16833 B78-10152 01
Direct-reading group-delay measurement
NPO-13909 B78-10156 01
Arc detector uses fiber optics
NPO-13377 B78-10449 01
Miniature Ku-Band down converter
MSC-18313 B78-10450 01
More efficient microwave-power transmission
NPO-13885 B78-10466 02
Lightweight conical antenna reflector
NPO-13552 B78-10472 02

MICROWAVE REFLECTOMETERS

Dynamic measurement of bulk modulus
NPO-13226 B78-10543 06

MICROWAVE SWITCHING

High-power RF switch
NPO-14229 B78-10151 01

- Temperature stabilization of microwave ferrite devices
MSC-16833 B78-10152 01
- MICROWAVE TRANSMISSION**
Temperature stabilization of microwave ferrite devices
MSC-16833 B78-10152 01
Direct-reading group-delay measurement
NPO-13909 B78-10156 01
Arc detector uses fiber optics
NPO-13377 B78-10449 01
- MICROWAVES**
Microwave-beam safety subsystem
NPO-14224 B78-10317 02
Arc detector uses fiber optics
NPO-13377 B78-10449 01
- MINERAL DEPOSITS**
Improved nucleonic coal-thickness monitor
M-FS-23725 B78-10344 04
- MINERAL EXPLORATION**
Portable data system
ARC-11136 B78-10316 02
- MINING**
Improved nucleonic coal-thickness monitor
M-FS-23725 B78-10344 04
Coal mining with a liquid solvent
NPO-14028 B78-10345 04
- MIRRORS**
High-vacuum, low-temperature bond for second-surface mirrors
M-FS-23405 B78-10124 08
Optics for natural lighting
LANGLEY-12333 B78-10189 03
- MIXING CIRCUITS**
Pulse-width-modulated attenuator for AGC
NPO-14127 B78-10459 01
- MODAL RESPONSE**
Calculation of planar-truss modal frequencies
LANGLEY-12137 B78-10382 06
- MODELS**
Noise calculation on the basis of vortex flow models
LANGLEY-12271 B78-10078 06
Pneumatic servomechanisms
M-FS-23295 B78-10144 08
Fabrication of sea-floor models
NPO-13554 B78-10295 09
- MODULATION**
Direct-reading group-delay measurement
NPO-13909 B78-10156 01
Implementing OQASK by using MSK
NPO-13896 B78-10309 01
- MODULATORS**
Pulse-width-modulated attenuator for AGC
NPO-14127 B78-10459 01
- MODULES**
Collapsible module extends tenfold in height
NPO-13371 B78-10280 07
Photovoltaic systems test facility
LEWIS-13073 B78-10378 06
Orifice calibration module
LANGLEY-12269 B78-10393 06
Improved method of solar-cell assembly
LEWIS-12729 B78-10438 08
- MOISTURE CONTENT**
Response of graphite/epoxy composites to moisture
MSC-16899 B78-10228 04
- Effects of moisture on graphite/epoxy composites
MSC-18045 B78-10360 04
Detecting moisture in composite honeycomb panels
MSC-16750 B78-10550 06
Sealing microcircuits with adhesives
M-FS-23869 B78-10592 08
- MOISTURE METERS**
Sealing microcircuits with adhesives
M-FS-23869 B78-10592 08
- MOLDS**
Dip-molded t-shaped cannula
NPO-14073 B78-10062 05
Void-free foam insulation
MSC-16805 B78-10127 08
High-rise foam-in-place process
MSC-16931 B78-10128 08
- MOLECULAR IONS**
Positively charged membrane for urea dialysis
NPO-14101 B78-10241 05
- MOLYBDENUM**
Modified chemiluminescent NO analyzer accurately measures NOX
LEWIS-12850 B78-10047 04
Electroplating and stripping copper on molybdenum and niobium
LEWIS-12151 B78-10055 04
- MONITORS**
Real-time monitoring of crustal deformations
NPO-14124 B78-10034 03
Automatic radio-transmission monitor
NPO-13941 B78-10165 02
Automatic gain-balancing circuit
LANGLEY-12074 B78-10297 01
28-Bit serial word simulator/monitor
MSC-16418 B78-10315 02
Microwave-beam safety subsystem
NPO-14224 B78-10317 02
Improved nucleonic coal-thickness monitor
M-FS-23725 B78-10344 04
Remotely-powered intracranial pressure monitor
ARC-11120 B78-10362 05
Microprocessor-based cardiopulmonary monitor
MSC-18235 B78-10369 05
Electrical-ground monitor
MSC-18281 B78-10455 01
Multiplexed battery-bypass control system
NPO-14414 B78-10474 02
- MOSSBAUER EFFECT**
Mossbauer studies of bulk and thin-film FeTe
M-FS-23773 B78-10059 04
- MOTION STABILITY**
Improved notation controller
GSFC-12273 B78-10383 06
- MOTORS**
Three-phase induction motors
MSC-16904 B78-10281 07
Hall devices improve electric motor efficiency
M-FS-23828 B78-10303 01
Electric and hybrid vehicles
LEWIS-13077 B78-10423 07
Dynamic braking of bidirectional motors
ARC-11194 B78-10578 07
- MOUNTING**
High-vacuum, low-temperature bond for second-surface mirrors
M-FS-23405 B78-10124 08
- Mounting procedure for geological samples
MSC-18206 B78-10327 03
Riveting-force gage
NPO-13477 B78-10432 08
- MOVING TARGET INDICATORS**
Air-traffic surveillance systems
NPO-14173 B78-10313 02
- MULTICHANNEL COMMUNICATION**
Multichannel VCO needs only one reference
MSC-18225 B78-10448 01
- MULTILAYER INSULATION**
Laser wire stripping
MSC-18000 B78-10118 08
Match-mold process for foam insulation
MSC-16631 B78-10126 08
Void-free foam insulation
MSC-16805 B78-10127 08
High-rise foam-in-place process
MSC-16931 B78-10128 08
Fastener for thermal insulation blankets
MSC-18253 B78-10571 07
- MULTIPLEXING**
IC implementation of crossbar switches
NPO-13837 B78-10153 01
Multiplexed battery-bypass control system
NPO-14414 B78-10474 02
- MULTISPECTRAL PHOTOGRAPHY**
Multidimensional histograms
M-FS-23855 B78-10503 03
Predicting crop production from satellite data
GSFC-12379 B78-10595 09
- MUSCULAR FUNCTION**
Wideband EMG telemetry system
ARC-11209 B78-10375 05
- MYLAR (TRADEMARK)**
Partial interlaminar separation for composites
LANGLEY-12065 B78-10052 04
- MYOCARDIUM**
Improved myocardium transducer
NPO-14107 B78-10372 05

N

- NACELLES**
Nacelle incremental drag
LEWIS-12786 B78-10400 06
- NETWORK ANALYSIS**
Telecommunications network optimization
NPO-14486 B78-10476 02
- NEUTRON ACTIVATION ANALYSIS**
Film adhesive enhances neutron radiographic images
MSC-18061 B78-10081 06
- NEUTRON SCATTERING**
Film adhesive enhances neutron radiographic images
MSC-18061 B78-10081 06
- NEWTON-RAPHSON METHOD**
Predicting surface heat flux
MSC-16095 B78-10090 06
Analysis of beam columns
MSC-18009 B78-10402 06
Convectively cooled structures
LANGLEY-12347 B78-10404 06
- NICKEL**
Compatibility of Au-Cu-Ni braze alloy with NH₃
MSC-16864 B78-10219 04

- Hydrogen embrittlement of nickel
ARC-10966 B78-10231 04
- NICKEL ALLOYS**
Wrought nickel-base superalloy
LEWIS-12844 B78-10045 04
Two braze alloys for thin-wall components
M-FS-19206 B78-10117 08
A sharp knife for high temperatures
MSC-16932 B78-10278 07
Embrittlement proof nickel-alloy bellows
M-FS-19331 B78-10349 04
High-gradient continuous-casting furnace
LEWIS-12934 B78-10425 08
- NICKEL CADMIUM BATTERIES**
Continuous process fabricates battery plaque
GSFC-12054 B78-10132 08
- NICKEL COATINGS**
Continuous process fabricates battery plaque
GSFC-12054 B78-10132 08
- NICKEL PLATE**
Processing high-strength steel alloys
MSC-16172 B78-10441 08
- NIObIUM**
Electroplating and stripping copper on molybdenum and niobium
LEWIS-12151 B78-10055 04
- NITROGEN**
Oxygen and nitrogen raman spectra
LEWIS-12849 B78-10361 04
- NITROGEN DIOXIDE**
NO₂ measurement by chemiluminescence
LANGLEY-11378 B78-10386 06
- NITROGEN OXIDES**
Modified chemiluminescent NO analyzer accurately measures NOX
LEWIS-12850 B78-10047 04
- NOISE MEASUREMENT**
Noise calculation on the basis of vortex flow models
LANGLEY-12271 B78-10078 06
Calibration standards for PIND tests
MSC-18169 B78-10388 06
Shock during PIND test frees particles
M-FS-23829 B78-10389 06
Predicting rotor rotation noise
LANGLEY-12098 B78-10406 06
- NOISE METERS**
Pseudo-continuous-wave acoustic instrument
LANGLEY-12260 B78-10248 06
- NOISE REDUCTION**
Noise tolerant computer link
NPO-14152 B78-10160 02
Airframe design for reducing cabin noise
LANGLEY-12097 B78-10257 06
- NOMOGRAPHS**
Free-air content in fluid systems
MSC-16703 B78-10251 06
- NONDESTRUCTIVE TESTS**
Calibration method for an ultrasonic gray-scale recorder
LEWIS-12782 B78-10016 02
High-resolution gray-scale recorder
LEWIS-12783 B78-10017 02
Infrared scanners for temperature measurement in wind tunnels
LANGLEY-12171 B78-10077 06
Film adhesive enhances neutron radiographic images
MSC-18061 B78-10081 06
- Window flaw detection by backscatter lighting
MSC-16605 B78-10089 06
Inspection of adhesive-bonded radiators
MSC-18062 B78-10125 08
Improved epoxy adhesive with radiographic tracer
MSC-18020 B78-10225 04
Corrosion detection and evaluation
M-FS-24436 B78-10227 04
Pseudo-continuous-wave acoustic instrument
LANGLEY-12260 B78-10248 06
A solid-state phase-insensitive ultrasonic transducer
LANGLEY-12304 B78-10385 06
Automated inspection of wire-frame assemblies
GSFC-12321 B78-10546 06
Acoustic-optical imaging without immersion
M-FS-23876 B78-10549 06
Detecting moisture in composite honeycomb panels
MSC-16750 B78-10550 06
Detecting overpenetration of electron-beam welds
M-FS-19396 B78-10586 08
- NONFLAMMABLE MATERIALS**
Flame-retardant adhesive tape
MSC-16721 B78-10041 04
Fire-retardant epoxy polymers
ARC-11182 B78-10218 04
Heat resistant nontoxic laminate
ARC-11040 B78-10356 04
Coated-felt thermal insulation
MSC-12737 B78-10510 04
- NUCLEAR MAGNETIC RESONANCE**
Pulsed NMR spectroscopy
NPO-14023 B78-10175 03
Boosting production yield of biomedical peptides
NPO-14142 B78-10240 05
- NUCLEAR POWER PLANTS**
Directory of fire research specialists
LEWIS-13123 B78-10399 06
- NUCLEAR RADIATION SPECTROSCOPY**
Mossbauer studies of bulk and thin-film FeTe
M-FS-23773 B78-10059 04
- NUCLEAR REACTORS**
Convectively cooled structures
LANGLEY-12347 B78-10404 06
- NUCLEONICS**
Improved nucleonic coal-thickness monitor
M-FS-23725 B78-10344 04
- NUMERICAL ANALYSIS**
Bit-synchronizer lock detector
MSC-16744 B78-10164 02
Analysis of beam columns
MSC-18009 B78-10402 06
- NUMERICAL CONTROL**
Data processing for water monitoring system
MSC-16842 B78-10234 05
Microprocessor-based cardiopulmonary monitor
MSC-18235 B78-10369 05
- NUTATION**
Improved notation controller
GSFC-12273 B78-10383 06
- NUTS (FASTENERS)**
Antibackoff lock for nuts and bolts
MSC-16472 B78-10409 07
- O**
- O RING SEALS**
High-pressure cryogenic cylinder seal
M-FS-19335 B78-10421 07
- OCEAN MODELS**
Fabrication of sea-floor models
NPO-13554 B78-10295 09
- OCEANOGRAPHY**
Ocean-wave ray or crest diagrams in shoaling waters
LANGLEY-12380 B78-10341 03
- OIL EXPLORATION**
Pulse-echo probe of rock permeability near oil wells
NPO-14192 B78-10222 04
- OIL FIELDS**
Pulse-echo probe of rock permeability near oil wells
NPO-14192 B78-10222 04
- OIL RECOVERY**
Pulse-echo probe of rock permeability near oil wells
NPO-14192 B78-10222 04
- OPACITY**
Compact turbidity meter
KSC-11063 B78-10545 06
- OPHTHALMOLOGY**
Intraocular pressure reduction and regulation
LEWIS-12723 B78-10523 05
- OPTICAL COMMUNICATION**
Noncontact optical communication between moving stations
LANGLEY-12283 B78-10377 06
- OPTICAL DATA PROCESSING**
Video method for studying optical fields
M-FS-23103 B78-10036 03
- OPTICAL DENSITY**
Calibration method for an ultrasonic gray-scale recorder
LEWIS-12782 B78-10016 02
High-resolution gray-scale recorder
LEWIS-12783 B78-10017 02
Compact turbidity meter
KSC-11063 B78-10545 06
- OPTICAL EQUIPMENT**
Improved double-pass michelson interferometer
NPO-13999 B78-10177 03
Signal-interleaving device
GSFC-12111 B78-10319 03
Cosine-corrected optical diffuser
NPO-14288 B78-10322 03
NO₂ measurement by chemiluminescence
LANGLEY-11378 B78-10386 06
Processing multispectral signals from a discrete-sensor array
NPO-14211 B78-10442 09
Diffractoid x-ray focusing
GSFC-12357 B78-10487 03
- OPTICAL FILTERS**
Improved optical filter
GSFC-12225 B78-10027 03
- OPTICAL GYROSCOPES**
Optical gyroscope
NPO-14258 B78-10176 03
- OPTICAL MEASUREMENT**
Measuring surface displacements optically
M-FS-23861 B78-10321 03
Ocean-wave ray or crest diagrams in shoaling waters
LANGLEY-12380 B78-10341 03

- Automated chromosome analysis
 NPO-13913 B78-10364 05
 Detecting surface deformations
 photographically
 MSC-16156 B78-10547 06
- OPTICAL MEASURING INSTRUMENTS**
 Video method for studying optical fields
 M-FS-23103 B78-10036 03
 Improved double-pass michelson
 interferometer
 NPO-13999 B78-10177 03
 'Pseudobackscatter' laser velocimeter
 ARC-10970 B78-10318 03
 Modulation improves electro-optic object
 detector
 M-FS-23776 B78-10380 06
 Improved fourier interference
 spectrometer
 NPO-14025 B78-10485 03
 Improved servo for a michelson
 interferometer
 NPO-14093 B78-10488 03
 Miniature velocimeter
 LANGLEY-12281 B78-10539 06
 Automated control of crystal growth
 NPO-14420 B78-10582 08
- OPTICAL PATHS**
 Low-background trace-gas detector
 NPO-13683 B78-10168 03
- OPTICAL PROPERTIES**
 Instrument measures many optical
 properties in visible and IR
 LANGLEY-12285 B78-10489 03
- OPTICAL PUMPING**
 Common-cavity pumped laser
 GSFC-12237 B78-10320 03
 Vacuum-ultraviolet laser uses superfluid
 helium
 NPO-13993 B78-10323 03
- OPTICAL RADAR**
 Optical traffic-sensing concept
 NPO-13603 B78-10021 02
- OPTICAL RANGE FINDERS**
 Optical traffic-sensing concept
 NPO-13603 B78-10021 02
- OPTICAL REFLECTION**
 Optics for natural lighting
 LANGLEY-12333 B78-10189 03
- OPTICAL SCANNERS**
 Testing integrated circuits by
 photoexcitation
 M-FS-23943 B78-10451 01
- OPTIMAL CONTROL**
 Performance optimizing
 LANGLEY-11930 B78-10096 06
- ORBITAL POSITION ESTIMATION**
 A parameter-estimation subroutine
 package
 NPO-14263 B78-10447 09
- ORGANIC COMPOUNDS**
 Low-temperature elastomer production
 and curing
 NPO-13899 B78-10346 04
- ORGANIC MATERIALS**
 Predicting structures of cross-linked
 condensation polymers
 NPO-14007 B78-10352 04
- ORIFICE FLOW**
 Orifice calibration module
 LANGLEY-12269 B78-10393 06
- ORTHOPEDECS**
 Biomedical applications of ion-beam
 technology
 LEWIS-12807 B78-10363 05
 Wideband EMG telemetry system
 ARC-11209 B78-10375 05
- ORTHOTROPIC PLATES**
 Analysis of cracked orthotropic sheets
 LANGLEY-12288 B78-10405 06
- OSCILLATING FLOW**
 Fluidic-oscillator gas analyzer
 KSC-11014 B78-10253 06
- OSCILLATION DAMPERS**
 Vibration-free thermal link
 GSFC-12297 B78-10169 03
 Low-frequency vibration isolation
 NPO-13915 B78-10275 07
- OSCILLATORS**
 Three-function signal generator
 MSC-16672 B78-10306 01
- OSMOSIS**
 Forming 'dynamic' membranes on
 stainless steel
 MSC-18172 B78-10513 04
- OUTGASSING**
 Vacuum control for brazing stainless
 steel
 MSC-19457 B78-10115 08
- OVENS**
 Verifying the fit of mating contoured
 surfaces
 LANGLEY-11731 B78-10290 08
 Slurry-powder sintering furnace
 LANGLEY-11423 B78-10293 08
 Temperature-gradient oven
 M-FS-23919 B78-10390 06
- OXIDATION**
 Surface examination of small particles
 LEWIS-12842 B78-10075 06
- OXIDATION RESISTANCE**
 Low-chromium stainless steels
 LEWIS-12543 B78-10046 04
 Long-lasting solid-polymer electrolytic
 hygrometer
 NPO-13948 B78-10086 06
- OXIDE FILMS**
 Surface examination of small particles
 LEWIS-12842 B78-10075 06
 Natural-oxide solar-collector coatings
 M-FS-23518 B78-10326 03
- OXIDES**
 NO₂ measurement by
 chemiluminescence
 LANGLEY-11378 B78-10386 06
- OXIMETRY**
 A probe for blood-vessel and spinal
 interiors
 NPO-14132 B78-10242 05
- OXYGEN**
 Oxygen and nitrogen raman spectra
 LEWIS-12849 B78-10361 04
- OXYGEN PRODUCTION**
 High-yield process for preparing calcium
 superoxide
 ARC-11053 B78-10216 04
 Economical synthesis of potassium
 superoxide
 ARC-10992 B78-10353 04
- OXYGEN REGULATORS**
 Adjustable gas-flow restrictor
 MSC-19486 B78-10560 07
- OXYGEN SUPPLY EQUIPMENT**
 High-yield process for preparing calcium
 superoxide
 ARC-11053 B78-10216 04
- OXYGENATION**
 Dip-molded t-shaped cannula
 NPO-14073 B78-10062 05
 A probe for blood-vessel and spinal
 interiors
 NPO-14132 B78-10242 05
- P**
- PACKAGING**
 Self-sterilizing canister
 NPO-14237 B78-10064 05
- PAINTS**
 Fluorescent paint simplifies laser-beam
 alignment
 LEWIS-12571 B78-10030 03
 Fast-drying coating
 MSC-16056 B78-10060 04
 Improved alkali-metal/silicate binders
 GSFC-12303 B78-10224 04
 Coating for hot sliding seals
 MSC-16529 B78-10562 07
- PANELS**
 Lattice panels with high structural
 efficiency
 LANGLEY-11898 B78-10426 08
 Low-cost graphite/epoxy structural
 panels
 M-FS-23871 B78-10427 08
- PANORAMIC CAMERAS**
 Wide angle pinhole camera
 LANGLEY-11905 B78-10173 03
- PARABOLIC ANTENNAS**
 Optimizing multislit feeds for reflecting
 antennas
 NPO-14064 B78-10314 02
- PARABOLIC REFLECTORS**
 High-temperature solar converter
 GSFC-12234 B78-10032 03
- PARACHUTE FABRICS**
 Scale parachute fabrication
 M-FS-23139 B78-10141 08
- PARACHUTES**
 Scale parachute fabrication
 M-FS-23139 B78-10141 08
- PARTIAL DIFFERENTIAL EQUATIONS**
 Body-fitted coordinates systems
 transformations
 LANGLEY-12307 B78-10147 09
- PARTICLE MOTION**
 Automated electrophoresis apparatus
 M-FS-23983 B78-10516 04
 Separating biological cells
 M-FS-23883 B78-10521 05
- PARTICLES**
 Calibration standards for PIND tests
 MSC-18169 B78-10388 06
 Shock during PIND test frees particles
 M-FS-23829 B78-10389 06
- PARTICULATE SAMPLING**
 Water sample-collection and distribution
 system
 MSC-16841 B78-10235 05
 Biological sampling and cleaning device
 NPO-14010 B78-10245 05
- PATIENTS**
 Medical Information Management
 System
 GSFC-12078 B78-10376 05
- PAYLOADS**
 Rigid 'Sling' for topheavy loads
 GSFC-12359 B78-10574 07
- PEDALS**
 Combination force and angular-deflection
 indicator
 MSC-16155 B78-10070 06
- PENETRATION**
 Penetrating fire extinguisher
 KSC-11064 B78-10397 06
 Detecting overpenetration of
 electron-beam welds
 M-FS-19396 B78-10586 08

PEPTIDES

Boosting production yield of biomedical peptides
 NPO-14142 B78-10240 05

PERFORMANCE PREDICTION

Air cushion landing system
 LANGLEY-12303 B78-10259 06

PERFORMANCE TESTS

Test-vehicle cycle programmer
 LEWIS-12977 B78-10020 02

Performance optimizing
 LANGLEY-11930 B78-10096 06

Strobe-margin test for plated memory systems
 M-FS-23838 B78-10154 01

Prototype solar-heating system-engineering analysis
 M-FS-23910 B78-10194 03

Testing of three hot-air solar collectors
 M-FS-23887 B78-10201 03

Performance and structural tests of hot-air solar collectors
 M-FS-23911 B78-10203 03

Thermal performance of a hot-air solar collector
 M-FS-23924 B78-10204 03

Flat-plate liquid solar collector
 M-FS-23912 B78-10205 03

Performance evaluations of a liquid solar collector
 M-FS-23931 B78-10206 03

Evaluation of an air solar collector
 M-FS-23978 B78-10336 03

Indoor tests of a hot-air solar collector
 M-FS-23954 B78-10337 03

Performance evaluation of an air solar collector
 M-FS-23968 B78-10338 03

Outdoor tests of a liquid solar collector
 M-FS-23969 B78-10339 03

Solar simulator test facility
 M-FS-23972 B78-10477 03

Solar-heating system performance tests
 M-FS-25021 B78-10493 03

Development and testing of a hot-air solar collector
 M-FS-23997 B78-10497 03

Liquid solar collector-performance tests
 M-FS-25082 B78-10499 03

PERSPIRATION
 Sweat collection capsule
 ARC-11031 B78-10367 05

PHASE CONTROL
 Femtosecond time-domain phase comparator
 GSFC-12228 B78-10162 02

Phase-shift array, arbitrary and continuous through 360 deg
 LANGLEY-12272 B78-10308 01

PHASE DETECTORS
 Femtosecond time-domain phase comparator
 GSFC-12228 B78-10162 02

Chopper-stabilized phase detector
 MSC-16461 B78-10163 02

Simplified phase detector
 NPO-13395 B78-10457 01

Narrow-bandwidth receiver
 GSFC-12142 B78-10463 02

PHASE ERROR
 Femtosecond time-domain phase comparator
 GSFC-12228 B78-10162 02

Bit-synchronizer lock detector
 MSC-16744 B78-10164 02

PHASE LOCKED SYSTEMS

Digital phase shifter synchronizes local oscillators
 MSC-16695 B78-10011 01

Bit-synchronizer lock detector
 MSC-16744 B78-10164 02

PHASE MODULATION

Determining the response of an FM receiver
 MSC-16751 B78-10465 02

PHASE SHIFT

Femtosecond time-domain phase comparator
 GSFC-12228 B78-10162 02

PHASE SHIFT CIRCUITS
 Digital phase shifter synchronizes local oscillators
 MSC-16695 B78-10011 01

Directional laser velocimeter with doppler velocity simulator
 LANGLEY-12176 B78-10029 03

Control of small phased-array antennas
 MSC-14938 B78-10166 02

Phase-shift array, arbitrary and continuous through 360 deg
 LANGLEY-12272 B78-10308 01

PHASE SHIFT KEYING
 Eliminating ambiguity in digital signals
 NPO-14289 B78-10469 02

PHASED ARRAYS
 Control of small phased-array antennas
 MSC-14938 B78-10166 02

PHONOCARDIOGRAPHY
 Noncontacting electrokinetography system
 MSC-18162 B78-10533 05

PHOSPHORIC ACID
 Long-lasting solid-polymer electrolytic hygrometer
 NPO-13948 B78-10086 06

PHOSPHORS
 Custom blending of lamp phosphors
 MSC-16692 B78-10056 04

PHOSPHORUS
 Fire-retardant epoxy polymers
 ARC-11182 B78-10218 04

PHOTODECOMPOSITION
 Solar photolysis of water
 NPO-14126 B78-10049 04

PHOTOELECTRIC CELLS
 Noncontact measurement of angular deflection
 LANGLEY-12178 B78-10071 06

More efficient GaAs solar cells
 LANGLEY-12216 B78-10479 03

Ultrathin films as photomechanical transducer
 NPO-14363 B78-10491 03

PHOTOELECTRIC EMISSION
 Testing integrated circuits by photoexcitation
 M-FS-23943 B78-10451 01

PHOTOGRAPHIC MEASUREMENT
 Detecting surface deformations photographically
 MSC-16156 B78-10547 06

PHOTOGRAPHIC RECORDING
 Z-axis control loop for cathode-ray tubes
 NPO-13775 B78-10305 01

PHOTOGRAPHY
 Wide angle pinhole camera
 LANGLEY-11905 B78-10173 03

PHOTOLUMINESCENCE
 Custom blending of lamp phosphors
 MSC-16692 B78-10056 04

PHOTOLYSIS

Solar photolysis of water
 NPO-14126 B78-10049 04

PHOTOMECHANICAL EFFECT
 Ultrathin films as photomechanical transducer
 NPO-14363 B78-10491 03

PHOTOMETERS
 Video method for studying optical fields
 M-FS-23103 B78-10036 03

PHOTOVOLTAIC CELLS
 Terrestrial photovoltaic measurements
 LEWIS-13057 B78-10310 01

Power loss for high-voltage solar-cell arrays
 LEWIS-12865 B78-10340 03

Photovoltaic systems test facility
 LEWIS-13073 B78-10378 06

Improved method of solar-cell assembly
 LEWIS-12729 B78-10438 08

PHYSIOLOGICAL RESPONSES
 Hand-held vital-signals monitor
 MSC-18232 B78-10524 05

Hybrid temperature-monitoring circuit
 MSC-18231 B78-10525 05

Hybrid ECG signal conditioner
 MSC-18230 B78-10526 05

Hybrid LCD driver
 MSC-18229 B78-10529 05

Hybrid clock generator
 MSC-18228 B78-10530 05

PIERCING
 Penetrating fire extinguisher
 KSC-11064 B78-10397 06

PIEZOELECTRIC TRANSDUCERS
 A solid-state phase-insensitive ultrasonic transducer
 LANGLEY-12304 B78-10385 06

PINHOLES
 Rapid leak detection with liquid crystals
 MSC-13804 B78-10084 06

PINS
 High-strength blind rivet
 LANGLEY-12154 B78-10287 08

PIPELINES
 Solar hot-water system
 M-FS-25043 B78-10495 03

PIPES (TUBES)
 Gentle support stands for fluid-line mockups
 MSC-16479 B78-10291 08

Device for pitching off metal tubes
 GSFC-12274 B78-10410 07

Quick-connect threaded attachment joint
 LANGLEY-12232 B78-10414 07

Insulator for cryogenic joints
 M-FS-19361 B78-10419 07

PISTON ENGINES
 Boosting the power of two-stage engines
 NPO-14057 B78-10105 07

Simpler valve for reciprocating engines
 MSC-16239 B78-10276 07

PISTONS
 Self-centering stepped piston
 LEWIS-12997 B78-10101 07

Compact piston-position sensor
 LEWIS-12392 B78-10102 07

Simple air-piston gas-sampling system
 LEWIS-12922 B78-10110 07

High-pressure cryogenic cylinder seal
 M-FS-19335 B78-10421 07

PIITCHING MOMENTS
 Aircraft trailing vortex hazard alleviators
 LANGLEY-12034 B78-10272 07

- PITOT TUBES**
 Static-pressure probe for small geometries
 LANGLEY-11552 B78-10395 06
- PIVOTS**
 Rigid coupling is also flexible
 MSC-16488 B78-10098 07
- PLANNING**
 Thin silicon-solar cell fabrication
 NPO-14047 B78-10325 03
- PLANTS (BOTANY)**
 Chemical agent boosts natural-rubber output
 NPO-14185 B78-10358 04
- PLASMA ELECTRODES**
 Plasma igniter for internal-combustion engines
 NPO-13828 B78-10100 07
- PLASMA HEATING**
 Plasma igniter for internal-combustion engines
 NPO-13828 B78-10100 07
- PLASTIC COATINGS**
 Boron trifluoride coatings for plastics
 ARC-11057 B78-10043 04
- PLASTIC PROPERTIES**
 Scratch resistant plastic lenses
 ARC-11039 B78-10519 04
- PLASTICS**
 Predicting structures of cross-linked condensation polymers
 NPO-14007 B78-10352 04
 Antistatic coating for acrylics
 NPO-13867 B78-10509 04
- PLATENS**
 High-temperature brazing of stainless steel
 MSC-19459 B78-10112 08
 Form die and glide plates for vacuum brazing
 MSC-16549 B78-10113 08
- PLATES (STRUCTURAL MEMBERS)**
 Brazed boron-silicon carbide/aluminum structural panels
 LANGLEY-12244 B78-10221 04
- PLATING**
 Electroplated 'cold patch' for critical parts
 M-FS-19401 B78-10584 08
- PLATINUM**
 Calibration target for temperature radiometer
 LANGLEY-12239 B78-10083 06
- PNEUM CHAMBERS**
 Air cushion landing system
 LANGLEY-12303 B78-10259 06
- PLOTTING**
 Plotting shear-flow forces
 MSC-18013 B78-10445 09
 Plotting max/min data envelopes
 MSC-18016 B78-10597 09
- PLUGGING**
 Device for pitching off metal tubes
 GSFC-12274 B78-10410 07
 Repairing pin-fin cold plates
 MSC-16424 B78-10431 08
- PLUGS**
 Repairing pin-fin cold plates
 MSC-16424 B78-10431 08
- PLYWOOD**
 Form die and glide plates for vacuum brazing
 MSC-16549 B78-10113 08
- PNEUMATIC CONTROL**
 Improved gas thrust bearings
 LEWIS-12569 B78-10413 07
- PNEUMATIC EQUIPMENT**
 Pneumatic servomechanisms
 M-FS-23295 B78-10144 08
- POISONS**
 Toxic substances handbook
 LEWIS-13124 B78-10359 04
- POISSON RATIO**
 Measuring poisson's ratio in elastomers
 M-FS-23878 B78-10387 06
- POLISHING**
 Process for growing thin polished silicon sheets
 NPO-14172 B78-10434 08
- POLLUTION**
 Automated syringe sampler
 LANGLEY-12308 B78-10374 05
- POLLUTION CONTROL**
 Microbial desulfurization of coal
 NPO-14227 B78-10038 04
- POLLUTION MONITORING**
 Rapid measurement of bacteria in water
 GSFC-12158 B78-10232 05
 Monitoring systems for community water supplies
 MSC-16778 B78-10233 05
 Data processing for water monitoring system
 MSC-16842 B78-10234 05
 Compact turbidity meter
 KSC-11063 B78-10545 06
- POLYBENZIMIDAZOLE**
 Ultrafine PBI fibers and yarns
 ARC-11221 B78-10504 04
- POLYCARBONATES**
 Abrasion-resistant antireflective coating for polycarbonate
 ARC-11047 B78-10054 04
 Long-lasting solid-polymer electrolytic hygrometer
 NPO-13948 B78-10086 06
- POLYESTERS**
 Fire-and smoke-retardant polyesters and elastomers
 NPO-14053 B78-10058 04
- POLYIMIDES**
 Polyimide adhesives for titanium and composite bonding
 LANGLEY-12257 B78-10040 04
 Fire-retardant foams
 MSC-16222 B78-10053 04
 Antistatic additive for polyimide films
 NPO-14232 B78-10220 04
- POLYISOPRENES**
 Chemical agent boosts natural-rubber output
 NPO-14185 B78-10358 04
- POLYMER CHEMISTRY**
 High-pressure liquid chromatography of aromatic amines
 LANGLEY-12163 B78-10515 04
 Porous bead packings for gas chromatography
 ARC-11222 B78-10518 04
- POLYMER PHYSICS**
 Separating biological cells
 M-FS-23883 B78-10521 05
- POLYMERIC FILMS**
 Selection standard for FEP films for solar energy
 MSC-16999 B78-10190 03
 Antistatic additive for polyimide films
 NPO-14232 B78-10220 04
- POLYMERIZATION**
 Improved imide polymerization catalyst
 ARC-11107 B78-10517 04
- POLYMERS**
 Fire-retardant epoxy polymers
 ARC-11182 B78-10218 04
- POLYURETHANE FOAM**
 High-rise foam-in-place process
 MSC-16931 B78-10128 08
 Insulator for cryogenic joints
 M-FS-19361 B78-10419 07
- POROUS MATERIALS**
 Tool simplifies weld preparation of aluminum
 MSC-16992 B78-10123 08
- PORPHYRINS**
 Chemiluminescence and bioluminescence microbe detection
 MSC-16779 B78-10237 05
- PORTABLE EQUIPMENT**
 Portable spark-gap arc generator
 LEWIS-12886 B78-10008 01
 Hand-held vital-signals monitor
 MSC-18232 B78-10524 05
 Hybrid temperature-monitoring circuit
 MSC-18231 B78-10525 05
 Hybrid ECG signal conditioner
 MSC-18230 B78-10526 05
 Hybrid LCD driver
 MSC-18229 B78-10529 05
 Hybrid clock generator
 MSC-18228 B78-10530 05
- POSITION (LOCATION)**
 Compact piston-position sensor
 LEWIS-12392 B78-10102 07
 Helicopter position stabilizing system
 LANGLEY-11670 B78-10256 06
- POSITION INDICATORS**
 Compact piston-position sensor
 LEWIS-12392 B78-10102 07
 Noncontacting valve-position indicator
 MSC-16048 B78-10412 07
 'Blind' position indicator
 MSC-16972 B78-10570 07
- POSITIONING**
 Housing protects laser in vacuum
 GSFC-12241 B78-10028 03
 Laser beam assists in precision welding
 M-FS-19319 B78-10122 08
 Tile-bonding tool
 KSC-11053 B78-10134 08
- POSITIONING DEVICES (MACHINERY)**
 Collapsible module extends tenfold in height
 NPO-13371 B78-10280 07
- POTASSIUM COMPOUNDS**
 Economical synthesis of potassium superoxide
 ARC-10992 B78-10353 04
- POTENTIAL FLOW**
 Potential flows in propulsion system inlets
 LEWIS-13010 B78-10553 06
- POTTING COMPOUNDS**
 No-warp potted circuits
 MSC-19729 B78-10435 08
- POURING**
 Void-free foam insulation
 MSC-16805 B78-10127 08
 High-rise foam-in-place process
 MSC-16931 B78-10128 08
- POWDER METALLURGY**
 Wrought nickel-base superalloy
 LEWIS-12844 B78-10045 04
 Slurry-powder sintering furnace
 LANGLEY-11423 B78-10293 08
- POWER EFFICIENCY**
 Boosting the power of two-stage engines
 NPO-14057 B78-10105 07

POWER LINES

- Power-switch dV/dt sensing
 MSC-16707 B78-10307 01
 Transmitting rotary motion at an angle
 MSC-19483 B78-10561 07

POWER SPECTRA

- Measuring radio-signal power accurately
 NPO-13373 B78-10464 02

POWER SUPPLY CIRCUITS

- Efficient dc-to-dc converter
 FRC-11014 B78-10012 01
 Automatic load sharing in inverter modules
 NPO-14056 B78-10302 01
 Voltage regulator for solar panels
 NPO-13895 B78-10478 03

PRECIPITATION (CHEMISTRY)

- Positively charged membrane for urea dialysis
 NPO-14101 B78-10241 05

PRECONDITIONING

- Tool simplifies weld preparation of aluminum
 MSC-16992 B78-10123 08

PREDICTION ANALYSIS TECHNIQUES

- Predicting rotor rotation noise
 LANGLEY-12098 B78-10406 06

PREFORMS

- Match-mold process for foam insulation
 MSC-16631 B78-10126 08

PREPOLYMERS

- Polyimide adhesives for titanium and composite bonding
 LANGLEY-12257 B78-10040 04

PRESERVING

- Mounting procedure for geological samples
 MSC-18206 B78-10327 03

PRESSURE CHAMBERS

- Compression testing of flammable liquids
 MSC-16121 B78-10548 06

PRESSURE DISTRIBUTION

- Hydraulic dynamic analysis
 MSC-16795 B78-10095 06
 Tile-bonding tool
 KSC-11053 B78-10134 08

- Wing aerodynamics under blowing jets
 LANGLEY-12256 B78-10401 06

PRESSURE MEASUREMENTS

- Pressure-sensitive glass reaction cell
 LANGLEY-11256 B78-10223 04
 Oxygen and nitrogen raman spectra
 LEWIS-12849 B78-10361 04
 High-temperature microphone system
 LANGLEY-12375 B78-10384 06
 Orifice calibration module
 LANGLEY-12269 B78-10393 06
 Shock-swallowing air sensor
 FRC-10107 B78-10537 06
 Dynamic measurement of bulk modulus
 NPO-13226 B78-10543 06

PRESSURE REDUCTION

- Dual relief-valve system
 LANGLEY-12267 B78-10111 07
 Testing of three hot-air solar collectors
 M-FS-23887 B78-10201 03
 Topping pressure for gas-storage cylinders
 MSC-18186 B78-10542 06

PRESSURE REGULATORS

- Magnetostrictive valve
 NPO-14235 B78-10104 07
 Precision fluid-pressure regulator
 NPO-13370 B78-10106 07

Wide-temperature corrosion-resistant pressure regulator
 NPO-13776 B78-10274 07

Stable hydraulic pressure regulator
 LEWIS-13058 B78-10417 07

Flow-compensating pressure regulator
 LEWIS-12718 B78-10522 05

Intraocular pressure reduction and regulation
 LEWIS-12723 B78-10523 05

Automatic bypass valve
 LANGLEY-12063 B78-10558 07

Adjustable gas-flow restrictor
 MSC-19486 B78-10560 07

PRESSURE SENSORS

Remotely-powered intracranial pressure monitor
 ARC-11120 B78-10362 05

Electronically-scanned pressure measurement system
 LANGLEY-12386 B78-10394 06

Static-pressure probe for small geometries
 LANGLEY-11552 B78-10395 06

High-temperature capacitive pressure transducer
 LEWIS-13078 B78-10398 06

High-sampling-rate pressure transducer has in situ calibration
 LANGLEY-12230 B78-10536 06

PRESSURE VESSELS

Compact pressure-line coupling
 MSC-16893 B78-10099 07

Dual relief-valve system
 LANGLEY-12267 B78-10111 07

Predicting damage from exploding vessels
 LEWIS-13042 B78-10258 06

PRESTRESSING

Ultrasonic extensometer measures bolt preload
 M-FS-19337 B78-10271 07

PRIMATES

Automatic primate feeder
 LANGLEY-11586 B78-10246 05

PRIMERS (COATINGS)

Fast-drying coating
 MSC-16056 B78-10060 04

PRINTED CIRCUITS

Fuseholders allow fast system checkout
 MSC-16856 B78-10088 06

Bench-top soldering aid for PC boards
 MSC-16274 B78-10121 08

'PC fabrication' for silicon solar-cell arrays
 NPO-13991 B78-10131 08

No-warp potted circuits
 MSC-19729 B78-10435 08

Circuit-lead trimming template
 MSC-16589 B78-10439 08

PRISMS

Laser beam color separator
 LANGLEY-11806 B78-10174 03

PROBES

Standardized gas-temperature probes
 LEWIS-13059 B78-10392 06

PROBLEM SOLVING

Performance optimizing
 LANGLEY-11930 B78-10096 06

Body-fitted coordinates systems transformations
 LANGLEY-12307 B78-10147 09

Problems encountered in solar heating and cooling systems
 M-FS-23974 B78-10331 03

PRODUCT DEVELOPMENT

CMOS-array design-automation techniques
 M-FS-23762 B78-10311 01

PRODUCTION MANAGEMENT

Handbook for estimating fabrication costs
 M-FS-23795 B78-10140 08

PRODUCTION PLANNING

Electrolysis cell stimulation
 LEWIS-12740 B78-10179 03

PROGRAMMING LANGUAGES

Processor for the UNIVAC 1100 series
 NPO-13469 B78-10600 09

PROJECT PLANNING

Price and cost estimation
 M-FS-23812 B78-10599 09

PROJECTILES

Measuring projectile speed
 LANGLEY-12387 B78-10538 06

PROPELLANT BINDERS

Low-temperature elastomer production and curing
 NPO-13899 B78-10346 04

PROPELLANT DECOMPOSITION

Pressure-sensitive glass reaction cell
 LANGLEY-11256 B78-10223 04

PROPELLANT TANKS

Predicting damage from exploding vessels
 LEWIS-13042 B78-10258 06

PROPELLER DRIVE

Predicting rotor rotation noise
 LANGLEY-12098 B78-10406 06

PROPULSION SYSTEM CONFIGURATIONS

Potential flows in propulsion system inlets
 LEWIS-13010 B78-10553 06

PROSTHETIC DEVICES

Artificial leg with natural gait
 M-FS-23225 B78-10239 05

Biomedical applications of ion-beam technology
 LEWIS-12807 B78-10363 05

PROTECTION

Housing protects laser in vacuum
 GSFC-12241 B78-10028 03

Simulator for training remote-manipulator operators
 MSC-14921 B78-10415 07

PROTECTIVE COATINGS

Boron trifluoride coatings for plastics
 ARC-11057 B78-10043 04

Protective coating for laser diodes
 LANGLEY-11746 B78-10171 03

Improved alkali-metal/silicate binders
 GSFC-12303 B78-10224 04

Repairing silicon carbide coatings
 MSC-18033 B78-10226 04

Protective coating for copper in aluminum heat exchangers
 M-FS-19334 B78-10286 08

Embrittlement proof nickel-alloy bellows
 M-FS-19331 B78-10349 04

Predicting structures of cross-linked condensation polymers
 NPO-14007 B78-10352 04

Measurement of subcoat thickness by characteristic x-rays
 MSC-16718 B78-10505 04

PROTOTYPES

Prototype solar-heating system-engineering analysis
 M-FS-23910 B78-10194 03

- Prototype solar-heating system -
 installation manual
 M-FS-23907 878-10195 03
- PROTRACTORS**
 Combination force and angular-deflection
 indicator
 MSC-16155 878-10070 06
- PUBLIC HEALTH**
 Toxic substances handbook
 LEWIS-13124 878-10359 04
 Medical Information Management
 System
 GSFC-12078 878-10376 05
- PULLEYS**
 Emergency escape device
 M-FS-23235 878-10270 07
 Durable nonslip stainless-steel
 drivebelts
 GSFC-12276 878-10567 07
- PULMONARY FUNCTIONS**
 Microprocessor-based cardiopulmonary
 monitor
 MSC-18235 878-10369 05
- PULSE CODE MODULATION**
 Noise tolerant computer link
 NPO-14152 878-10160 02
- PULSE COMMUNICATION**
 Noise tolerant computer link
 NPO-14152 878-10160 02
- PULSE DURATION**
 Pulsed NMR spectroscopy
 NPO-14023 878-10175 03
- PULSE DURATION MODULATION**
 Pulse-width-modulated attenuator for
 AGC
 NPO-14127 878-10459 01
- PULSE GENERATORS**
 Simple digital pulse-programing circuit
 NPO-13747 878-10299 01
- PULSE MODULATION**
 Noncontact optical communication
 between moving stations
 LANGLEY-12283 878-10377 06
- PULSED LASERS**
 Low-background trace-gas detector
 NPO-13683 878-10168 03
- PULSES**
 Simple digital pulse-programing circuit
 NPO-13747 878-10299 01
- PUMPS**
 Pump efficiency in solar-energy
 systems
 M-FS-23934 878-10213 03
 Solar-powered hot-water system
 NPO-14270 878-10324 03
 Stable hydraulic pressure regulator
 LEWIS-13058 878-10417 07
 Drag-pump rotating filter
 MSC-16180 878-10563 07
- PUNCHES**
 Form die and glide plates for vacuum
 brazing
 MSC-16549 878-10113 08
- PURGING**
 Internal grid for release of brazing
 retorts
 MSC-19472 878-10114 08
 Deaerating high-viscosity silicon rubber
 MSC-16694 878-10514 04
- PURIFICATION**
 Corona-discharge air-purification system
 ARC-10975 878-10350 04
 Low-temperature refining of coal
 NPO-14210 878-10511 04
 Accelerated purification of colloidal silica
 sols
 MSC-16793 878-10512 04
- PYRANOMETERS**
 Voice-output solar energy reporter
 LEWIS-12947 878-10022 02
- PYRITES**
 Coal desulfurization with iron
 pentacarbonyl
 NPO-14272 878-10342 04
- PYROLYSIS**
 Chemical-vapor deposition of silicon from
 silane
 NPO-14403 878-10502 03
- PYROMETALLURGY**
 Model of silicon production in a
 fluidized-bed reactor
 NPO-14404 878-10520 04
- Q**
- QUALITY CONTROL**
 Automated tester for MOS devices
 NPO-14088 878-10001 01
 Measuring oxide trapping parameters in
 MOS structure
 NPO-14120 878-10002 01
 Curve tracer checks CMOS IC's
 GSFC-12209 878-10007 01
 Window flaw detection by backscatter
 lighting
 MSC-16605 878-10089 06
 Reclaiming hybrid integrated circuits
 MSC-16463 878-10129 08
 Water sample-collection and distribution
 system
 MSC-16841 878-10235 05
 Precise matching of diodes
 NPO-14293 878-10452 01
 SEM probe of IC radiation sensitivity
 NPO-14350 878-10541 06
 Automated inspection of wire-frame
 assemblies
 GSFC-12321 878-10546 06
- R**
- RADAR**
 Air-traffic surveillance systems
 NPO-14173 878-10313 02
- RADAR EQUIPMENT**
 Miniature Ku-Band down converter
 MSC-18313 878-10450 01
- RADIANT COOLING**
 Modular heat-pipe-radiator panel
 MSC-16625 878-10328 03
- RADIATION**
 Finding radiant-energy sources
 GSFC-12147 878-10159 02
- RADIATION DETECTORS**
 Low-intensity x-ray and gamma-ray
 imaging device
 GSFC-12263 878-10061 05
 Inexpensive, portable, integrating solar
 energy meter
 LEWIS-12804 878-10188 03
 Stacked solar cells measure X-ray
 exposure
 NPO-13954 878-10243 05
- RADIATION DISTRIBUTION**
 Improved conical solar concentrator
 NPO-13825 878-10187 03
 Compact antenna has symmetrical
 radiation pattern
 ARC-11189 878-10473 02
- RADIATION DOSAGE**
 Low-intensity x-ray and gamma-ray
 imaging device
 GSFC-12263 878-10061 05
 Improved control of medical x-ray film
 exposure
 NPO-13808 878-10063 05
 Stacked solar cells measure X-ray
 exposure
 NPO-13954 878-10243 05
- RADIATION HARDENING**
 SEM probe of IC radiation sensitivity
 NPO-14350 878-10541 06
- RADIATION HAZARDS**
 Simulator for training
 remote-manipulator operators
 MSC-14921 878-10415 07
- RADIATION MEASUREMENT**
 Inexpensive, portable, integrating solar
 energy meter
 LEWIS-12804 878-10188 03
- RADIATION MEASURING INSTRUMENTS**
 Stacked solar cells measure X-ray
 exposure
 NPO-13954 878-10243 05
 Improved nucleonic coal-thickness
 monitor
 M-FS-23725 878-10344 04
- RADIATION PROTECTION**
 Electrically-conducting thermal-control
 coating
 GSFC-12207 878-10044 04
 Microwave-beam safety subsystem
 NPO-14224 878-10317 02
- RADIATION SHIELDING**
 Electrically-conducting thermal-control
 coating
 GSFC-12207 878-10044 04
- RADIATION SOURCES**
 Finding radiant-energy sources
 GSFC-12147 878-10159 02
- RADIATIVE HEAT TRANSFER**
 Orbital heat rate package
 M-FS-23980 878-10554 06
- RADIO ANTENNAS**
 Human arm may act as antenna
 ARC-11195 878-10161 02
- RADIO COMMUNICATION**
 Human arm may act as antenna
 ARC-11195 878-10161 02
- RADIO EQUIPMENT**
 High-power RF switch
 NPO-14229 878-10151 01
- RADIO FREQUENCIES**
 High-power RF switch
 NPO-14229 878-10151 01
- RADIO FREQUENCY INTERFERENCE**
 Portable spark-gap arc generator
 LEWIS-12886 878-10008 01
 Finding radiant-energy sources
 GSFC-12147 878-10159 02
 Automatic radio-transmission monitor
 NPO-13941 878-10165 02
- RADIO INTERFEROMETERS**
 Real-time monitoring of crustal
 deformations
 NPO-14124 878-10034 03
- RADIO RECEIVERS**
 Narrow-bandwidth receiver
 GSFC-12142 878-10463 02
 Wideband digital spectrum analyzer
 NPO-14394 878-10468 02
- RADIO RELAY SYSTEMS**
 Preventing radio-paging system tieup
 MSC-19696 878-10024 02

RADIO SIGNALS

Automatic acquisition and ranging system
 NPO-13982 B78-10312 02
 Measuring radio-signal power accurately
 NPO-13373 B78-10464 02

RADIO SPECTRA

Wideband digital spectrum analyzer
 NPO-14394 B78-10468 02

RADIO TRANSMISSION

Automatic radio-transmission monitor
 NPO-13941 B78-10165 02
 Implementing OQASK by using MSK
 NPO-13896 B78-10309 01
 More efficient microwave-power transmission
 NPO-13885 B78-10466 02

RADIO TRANSMITTERS

Multichannel VCO needs only one reference
 MSC-18225 B78-10448 01

RADIOGRAPHY

Low-intensity x-ray and gamma-ray imaging device
 GSFC-12263 B78-10061 05
 Improved control of medical x-ray film exposure
 NPO-13808 B78-10063 05
 Film adhesive enhances neutron radiographic images
 MSC-18061 B78-10081 06
 Improved epoxy adhesive with radiographic tracer
 MSC-18020 B78-10225 04
 Stacked solar cells measure X-ray exposure
 NPO-13954 B78-10243 05
 Detecting moisture in composite honeycomb panels
 MSC-16750 B78-10550 06
 Detecting overpenetration of electron-beam welds
 M-FS-19396 B78-10586 08

RADIOLOGY

Improved control of medical x-ray film exposure
 NPO-13808 B78-10063 05

RADIOMETERS

Calibration target for temperature radiometer
 LANGLEY-12239 B78-10083 06
 Cosine-corrected optical diffuser
 NPO-14288 B78-10322 03
 Estimating regional heat flux from scanning radiometer data
 LANGLEY-12158 B78-10329 03

RADIOTELEPHONES

Preventing radio-paging system tieup
 MSC-19696 B78-10024 02

RADOMES

Efficient rectifying antenna
 NPO-13884 B78-10471 02

RAIL TRANSPORTATION

Heat resistant nontoxic laminate
 ARC-11040 B78-10356 04

RAMAN SPECTRA

Oxygen and nitrogen raman spectra
 LEWIS-12849 B78-10361 04

RANDOM SIGNALS

Hybrid random-sound test-control system
 NPO-13900 B78-10025 02

RATINGS

Low-chromium stainless steels
 LEWIS-12543 B78-10046 04

RATS

Retainer for laboratory animals
 LANGLEY-12353 B78-10371 05

REACTION KINETICS

Model of silicon production in a fluidized-bed reactor
 NPO-14404 B78-10520 04

RECEIVERS

Wideband EMG telemetry system
 ARC-11209 B78-10375 05
 Miniature Ku-Band down converter
 MSC-18313 B78-10450 01
 Narrow-bandwidth receiver
 GSFC-12142 B78-10463 02
 Determining the response of an FM receiver
 MSC-16751 B78-10465 02

RECORDING INSTRUMENTS

High-resolution gray-scale recorder
 LEWIS-12783 B78-10017 02

RECORDS

Medical Information Management System
 GSFC-12078 B78-10376 05

RECOVERY PARACHUTES

Scale parachute fabrication
 M-FS-23139 B78-10141 08

RECTIFIERS

Precise matching of diodes
 NPO-14293 B78-10452 01
 Efficient rectifying antenna
 NPO-13884 B78-10471 02

RECTUM

Improved probe for rectal-cancer detection
 NPO-14247 B78-10531 05
 Self-propelling, self-locating colonoscope
 NPO-14092 B78-10532 05

REDUNDANCY

Verification of redundancy management design
 MSC-16713 B78-10145 09
 Model for redundant-sensor signal errors
 MSC-16715 B78-10146 09

REDUNDANCY ENCODING

Detecting and correcting bit errors on magnetic tape
 NPO-13842 B78-10294 09

REDUNDANT COMPONENTS

Verification of redundancy management design
 MSC-16713 B78-10145 09
 Model for redundant-sensor signal errors
 MSC-16715 B78-10146 09
 Synchronous transfer circuits for redundant systems
 NPO-14162 B78-10157 01
 Computation of spare parts requirements
 MSC-16872 B78-10593 09

REENTRY EFFECTS

Tumbling-vehicle entry heating
 M-FS-23712 B78-10555 06

REENTRY SHIELDING

Coated-felt thermal insulation
 MSC-12737 B78-10510 04

REFINING

Coal desulfurization with iron pentacarbonyl
 NPO-14272 B78-10342 04
 Zone-refining semiconductors encapsulated
 M-FS-23902 B78-10351 04

Low-temperature refining of coal
 NPO-14210 B78-10511 04
 Accelerated purification of colloidal silica sols
 MSC-16793 B78-10512 04
 Model of silicon production in a fluidized-bed reactor
 NPO-14404 B78-10520 04

REFLECTANCE

Ion-beam texturing of materials
 LEWIS-12996 B78-10357 04

REFLECTION

Improved conical solar concentrator
 NPO-13825 B78-10187 03

REFLECTOMETERS

Laser beam color separator
 LANGLEY-11806 B78-10174 03
 Instrument measures many optical properties in visible and IR
 LANGLEY-12285 B78-10489 03

REFLECTORS

High-vacuum, low-temperature bond for second-surface mirrors
 M-FS-23405 B78-10124 08
 Optimizing multislot feeds for reflecting antennas
 NPO-14064 B78-10314 02
 Zone-refining semiconductors encapsulated
 M-FS-23902 B78-10351 04
 Lightweight conical antenna reflector
 NPO-13552 B78-10472 02

REFRACTION

Ocean-wave ray or crest diagrams in shoaling waters
 LANGLEY-12380 B78-10341 03

REFRACTIVITY

Protective coating for laser diodes
 LANGLEY-11746 B78-10171 03

REFRIGERATING MACHINERY

Refrigerant leak detector
 MSC-18214 B78-10551 06

REFRIGERATORS

Thermal compensator for helium refrigerators
 GSFC-12168 B78-10082 06
 Practical and efficient magnetic heat pump
 LEWIS-12508 B78-10170 03

REGENERATORS

Dynamic braking of bidirectional motors
 ARC-11194 B78-10578 07

REGULATORS

Precision fluid-pressure regulator
 NPO-13370 B78-10106 07
 Power-switch dV/dt sensing
 MSC-16707 B78-10307 01
 Voltage regulator for solar panels
 NPO-13895 B78-10478 03

REINFORCING FIBERS

Ultrafine PBI fibers and yarns
 ARC-11221 B78-10504 04

REJECTION

S-Band complex-weight module for adaptive processing
 LANGLEY-12197 B78-10005 01
 Biocompatibility of surgical implants
 NPO-14291 B78-10368 05

RELIABILITY

Verification of redundancy management design
 MSC-16713 B78-10145 09
 Model for redundant-sensor signal errors
 MSC-16715 B78-10146 09
 Shock during PIND test frees particles
 M-FS-23829 B78-10389 06

- Electric and hybrid vehicles
LEWIS-13077 B78-10423 07
Circuit-lead trimming template
MSC-16589 B78-10439 08
Low partial discharge vacuum
feedthrough
GSFC-12347 B78-10559 07
Reducing stickiness of elastomer valve
seals
LANGLEY-11778 B78-10565 07
- RELIEF VALVES**
Dual relief-valve system
LANGLEY-12267 B78-10111 07
Air cushion landing system
LANGLEY-12303 B78-10259 06
- REMOTE CONSOLES**
28-Bit serial word simulator/monitor
MSC-16418 B78-10315 02
- REMOTE HANDLING**
Computer interface for mechanical arm
M-FS-23849 B78-10015 02
Simulator for training
remote-manipulator operators
MSC-14921 B78-10415 07
- REMOTE SENSORS**
Optical traffic-sensing concept
NPO-13603 B78-10021 02
Automated syringe sampler
LANGLEY-12308 B78-10374 05
Thermoelectrically-cooled variable-tem-
perature probe
MSC-18192 B78-10484 03
Self-propelling, self-locating
colonoscope
NPO-14092 B78-10532 05
- REMOVAL**
Adhesive-removal tool
MSC-19498 B78-10279 07
Drag-pump rotating filter
MSC-16180 B78-10563 07
Compact bypass-flow filter
MSC-18311 B78-10564 07
- REPLACING**
Spares-optimized model
MSC-18015 B78-10446 09
- REPLENISHMENT**
Spares-optimized model
MSC-18015 B78-10446 09
- REPLICAS**
Fabrication of sea-floor models
NPO-13554 B78-10295 09
- REPORT GENERATORS**
Voice-output solar energy reporter
LEWIS-12947 B78-10022 02
- REPRESENTATIONS**
Body-fitted coordinates systems
transformations
LANGLEY-12307 B78-10147 09
- RESIDUAL GAS**
Mass spectrometer calibration standard
NPO-14097 B78-10249 06
- RESIDUAL STRESS**
Ultra-high-strength boron fibers
LEWIS-12739 B78-10051 04
- RESIN BONDING**
New adhesive withstands temperature
extremes
GSFC-12345 B78-10042 04
- RESINS**
Fire-resistant wood composites
ARC-11174 B78-10508 04
- RESISTANCE HEATING**
Temperature stabilization of microwave
ferrite devices
MSC-16833 B78-10152 01
- RESISTANCE THERMOMETERS**
Calibration target for temperature
radiometer
LANGLEY-12239 B78-10083 06
- RESONANT FREQUENCIES**
Calculation of planar-truss modal
frequencies
LANGLEY-12137 B78-10382 06
- RESONATORS**
Ruby c-axis alignment system
NPO-14252 B78-10379 06
Low-power tuner for lasers
M-FS-23863 B78-10486 03
- RESOURCES**
Postprocessing classification images
MSC-18238 B78-10601 09
- RESOURCES MANAGEMENT**
Multiple-input land-use system concept
NPO-13903 B78-10018 02
- RESPIRATION**
Hand-held vital-signals monitor
MSC-18232 B78-10524 05
Hybrid respiration-signal conditioner
MSC-18226 B78-10527 05
Hybrid heart/breath-rate
processor
MSC-18227 B78-10528 05
- RETAINING**
Retainer for laboratory animals
LANGLEY-12353 B78-10371 05
Quick locking/unlocking retainer
MSC-18048 B78-10408 07
- RIBBON PARACHUTES**
Scale parachute fabrication
M-FS-23139 B78-10141 08
- RIGID MOUNTING**
Vibration-free thermal link
GSFC-12297 B78-10169 03
- RIVETED JOINTS**
High-strength blind rivet
LANGLEY-12154 B78-10287 08
- RIVETS**
High-strength blind rivet
LANGLEY-12154 B78-10287 08
Riveting-force gage
NPO-13477 B78-10432 08
Fastener for thin fragile
materials
MSC-18097 B78-10436 08
- ROBOTS**
Self-navigating robot
NPO-14190 B78-10026 02
- ROCKS**
Mounting procedure for geological
samples
MSC-18206 B78-10327 03
- RODS**
Vacuum leadthrough for hydrogen
maser
NPO-14148 B78-10422 07
- ROLLER BEARINGS**
Thermal performance of shaft bearing
system
LEWIS-12761 B78-10263 06
- ROLLING MOMENTS**
Aircraft trailing vortex hazard alleviators
LANGLEY-12034 B78-10272 07
- ROTARY STABILITY**
Improved notation controller
GSFC-12273 B78-10383 06
- ROTARY WINGS**
Predicting rotor rotation noise
LANGLEY-12098 B78-10406 06
- ROTATING BODIES**
Improved notation controller
GSFC-12273 B78-10383 06
- ROTATING SHAFTS**
Shaft speed control
NPO-14170 B78-10416 07
- Two (or more) rotary outputs from one
input
MSC-19450 B78-10568 07
- ROTATION**
Transmitting rotary motion at an angle
MSC-19483 B78-10561 07
- ROTOR BLADES**
Gas-path seal material
LEWIS-12623 B78-10347 04
- ROTOR BLADES (TURBOMACHINERY)**
Edge geometry of turbomachine blades
LEWIS-12979 B78-10262 06
- ROTORS**
Predicting rotor rotation noise
LANGLEY-12098 B78-10406 06
- RUBBER**
Chemical agent boosts natural-rubber
output
NPO-14185 B78-10358 04
No-warp potted circuits
MSC-19729 B78-10435 08
Reducing stickiness of elastomer valve
seals
LANGLEY-11778 B78-10565 07
- RUBY**
Ruby c-axis alignment system
NPO-14252 B78-10379 06
- RUDDERS**
Spring control of wire harness loops
MSC-18246 B78-10411 07
- RUNGE-KUTTA METHOD**
Solar-electric geocentric transfer
LEWIS-12939 B78-10403 06
- RUSTING**
Corrosion inhibitors for solar-heating and
cooling
M-FS-25023 B78-10501 03
- RUTHENIUM COMPOUNDS**
Solar photolysis of water
NPO-14126 B78-10049 04

S

SAFETY

- Microwave-beam safety subsystem
NPO-14224 B78-10317 02
Heat resistant nontoxic laminate
ARC-11040 B78-10356 04
Simulator for training
remote-manipulator operators
MSC-14921 B78-10415 07
Fire-resistant wood composites
ARC-11174 B78-10508 04

SAFETY DEVICES

- Cryostat safety tent
GSFC-12206 B78-10080 06
Modified pipe extension safely releases
chain binders
MSC-16937 B78-10103 07
Penetrating fire extinguisher
KSC-11064 B78-10397 06

SAFETY MANAGEMENT

- Infrared-enhanced TV for fire detection
M-FS-19380 B78-10172 03
Toxic substances handbook
LEWIS-13124 B78-10359 04
Directory of fire research specialists
LEWIS-13123 B78-10399 06

SAMPLERS

- Biological sampling and cleaning device
NPO-14010 B78-10245 05
Automated syringe sampler
LANGLEY-12308 B78-10374 05
Safe, durable soil sampler
MSC-18171 B78-10577 07

SAMPLES

Simple air-piston gas-sampling system
LEWIS-12922 B78-10110 07

SAMPLING

Rapid measurement of bacteria in water
GSFC-12158 B78-10232 05
Monitoring systems for community water supplies
MSC-16778 B78-10233 05
Water sample-collection and distribution system
MSC-16841 B78-10235 05
Device for pitching off metal tubes
GSFC-12274 B78-10410 07
High-sampling-rate pressure transducer has in situ calibration
LANGLEY-12230 B78-10536 06

SANDWICH STRUCTURES

Inspection of adhesive-bonded radiators
MSC-18062 B78-10125 08
Testing composite sheets at high temperatures
MSC-16237 B78-10252 06
Friction of thick laminates
LANGLEY-12010 B78-10284 08
Void-free bends in laminated structures
MSC-16998 B78-10285 08

SATELLITE SOLAR POWER STATIONS

Microwave-beam safety subsystem
NPO-14224 B78-10317 02

SCALE (RATIO)

Calibration method for an ultrasonic gray-scale recorder
LEWIS-12782 B78-10016 02
High-resolution gray-scale recorder
LEWIS-12783 B78-10017 02
Test-vehicle cycle programmer
LEWIS-12977 B78-10020 02

SCANNING

Ultrasonic evaluation of high-voltage circuit boards
LEWIS-12781 B78-10087 06
Energy conservation, using remote thermal scanning
LEWIS-12812 B78-10178 03

SCRAMBLING (COMMUNICATION)

Video scrambler/descrambler
MSC-16843 B78-10013 02

SCRAPERS

Adhesive-removal tool
MSC-19498 B78-10279 07

SCREWS

Nylon screws make inexpensive coil forms
MSC-16912 B78-10003 01
Ultrasonic extensometer measures bolt preload
M-FS-19337 B78-10271 07
Antibackoff lock for nuts and bolts
MSC-16472 B78-10409 07

SEA ROUGHNESS

Fabrication of sea-floor models
NPO-13554 B78-10295 09

SEALING

Device for pitching off metal tubes
GSFC-12274 B78-10410 07
Sealing microcircuits with adhesives
M-FS-23869 B78-10592 08

SEALS (STOPPERS)

Gas-path seal material
LEWIS-12623 B78-10347 04
High-pressure cryogenic cylinder seal
M-FS-19335 B78-10421 07
Ceramic-to-metal vacuum seal
NPO-13803 B78-10437 08

Multiple-sample holder for IC testing
NPO-14314 B78-10540 06
Coating for hot sliding seals
MSC-16529 B78-10562 07
Reducing stickiness of elastomer valve seals
LANGLEY-11778 B78-10565 07
Metallic thermal seal
MSC-18135 B78-10566 07

SECONDARY EMISSION

Ion-beam-textured graphite
LEWIS-12724 B78-10506 04

SEGMENTS

Hydraulic dynamic analysis
MSC-16795 B78-10095 06

SEMICONDUCTOR DEVICES

Automated tester for MOS devices
NPO-14088 B78-10001 01
Analyzing CMOS/SOS fabrication for LSI arrays
M-FS-23788 B78-10158 01
High-Speed, high-power, switching transistor
LEWIS-13021 B78-10298 01
Zone-refining encapsulated semiconductors
M-FS-23902 B78-10351 04
Precise matching of diodes
NPO-14293 B78-10452 01

SEMICONDUCTOR LASERS

Thermal compensator for helium refrigerators
GSFC-12168 B78-10082 06

SEMICONDUCTORS (MATERIALS)

Low partial discharge vacuum feedthrough
GSFC-12347 B78-10559 07

SENSITIVITY

Directional laser velocimeter with doppler velocity simulator
LANGLEY-12176 B78-10029 03

SEPARATORS

Improvements in microelectrophoresis apparatus
ARC-11121 B78-10247 05

SEQUENCING

High-rise foam-in-place process
MSC-16931 B78-10128 08

SERVOCONTROL

Improved servocontrol system
M-FS-19358 B78-10150 01
Detecting servo failures with software
FRC-11003 B78-10396 06
Improved servo for a michaelson interferometer
NPO-14093 B78-10488 03

SERVOMECHANISMS

Pneumatic servomechanisms
M-FS-23295 B78-10144 08

SETUPS

Simplified tooling for spray masking
MSC-16927 B78-10136 08

SHAFTS (MACHINE ELEMENTS)

Design of transmission shafting
LEWIS-12965 B78-10107 07
Thermal performance of shaft bearing system
LEWIS-12761 B78-10263 06
Shaft speed control
NPO-14170 B78-10416 07
Two-position wax-motor rotary actuator
GSFC-12521 B78-10557 07
Two (or more) rotary outputs from one input
MSC-19450 B78-10568 07

SHAKERS

Microcircuit-cleaning machine
MSC-16060 B78-10292 08

SHAPES

Form die and glide plates for vacuum brazing
MSC-16549 B78-10113 08

SHEAR FLOW

Plotting shear-flow forces
MSC-18013 B78-10445 09

SHEAR STRENGTH

Quick-and-easy shear-load testing
MSC-16765 B78-10073 06

SHEAR STRESS

Quick-and-easy shear-load testing
MSC-16765 B78-10073 06

SHELLS (STRUCTURAL FORMS)

Ladle for pouring hot melt
MSC-16974 B78-10137 08

SHIELDING

Splicing shielded cables
MSC-18297 B78-10453 01

SHIFT REGISTERS

Data reformatting with less hardware
NPO-13676 B78-10470 02

SHOCK ABSORBERS

Vibration-free thermal link
GSFC-12297 B78-10169 03
Low-frequency vibration isolation
NPO-13915 B78-10275 07
Bend-absorbing clamp
MSC-16971 B78-10575 07

SHOCK WAVES

Shock-swallowing air sensor
FRC-10107 B78-10537 06

SHORT CIRCUITS

Electrical-ground monitor
MSC-18281 B78-10455 01

SHOT PEENING

Processing high-strength steel alloys
MSC-16172 B78-10441 08

SIGNAL ANALYSIS

Hybrid random-sound test-control system
NPO-13900 B78-10025 02
Wideband digital spectrum analyzer
NPO-14394 B78-10468 02

SIGNAL DETECTION

High-resolution gray-scale recorder
LEWIS-12783 B78-10017 02
Simplified phase detector
NPO-13395 B78-10457 01

SIGNAL DETECTORS

Narrow-bandwidth receiver
GSFC-12142 B78-10463 02
Hybrid heart/breath-rate processor
MSC-18227 B78-10528 05

SIGNAL ENCODING

Video scrambler/descrambler
MSC-16843 B78-10013 02
Simplified data compressor
NPO-14041 B78-10023 02
Efficient digital encoding scheme
MSC-18267 B78-10467 02

SIGNAL GENERATORS

Three-function signal generator
MSC-16672 B78-10306 01

SIGNAL MEASUREMENT

Measuring radio-signal power accurately
NPO-13373 B78-10464 02

SIGNAL PROCESSING

Automatic gain-balancing circuit
LANGLEY-12074 B78-10297 01
Hybrid ECG signal conditioner
MSC-18230 B78-10526 05

- SIGNAL STABILIZATION**
Chopper-stabilized phase detector
MSC-16461 B78-10163 02
- SIGNAL TO NOISE RATIOS**
Noise tolerant computer link
NPO-14152 B78-10160 02
Measuring radio-signal power accurately
NPO-13373 B78-10464 02
- SIGNAL TRANSMISSION**
Implementing OQASK by using MSK
NPO-13896 B78-10309 01
Eliminating ambiguity in digital signals
NPO-14289 B78-10469 02
- SILANES**
Abrasion-resistant antireflective coating for polycarbonate
ARC-11047 B78-10054 04
Chemical-vapor deposition of silicon from silane
NPO-14403 B78-10502 03
Model of silicon production in a fluidized-bed reactor
NPO-14404 B78-10520 04
- SILICATES**
Improved alkali-metal/silicate binders
GSFC-12303 B78-10224 04
- SILICON**
Low-cost high purity production
NPO-14198 B78-10050 04
Inexpensive, portable, integrating solar energy meter
LEWIS-12804 B78-10188 03
Thin silicon-solar cell fabrication
NPO-14047 B78-10325 03
Process for growing thin polished silicon sheets
NPO-14172 B78-10434 08
Chemical-vapor deposition of silicon from silane
NPO-14403 B78-10502 03
Model of silicon production in a fluidized-bed reactor
NPO-14404 B78-10520 04
Controlling the growth of silicon sheets
NPO-14295 B78-10581 08
Automated control of crystal growth
NPO-14420 B78-10582 08
- SILICON CARBIDES**
Brazed boron-silicon carbide/aluminum structural panels
LANGLEY-12244 B78-10221 04
Repairing silicon carbide coatings
MSC-18033 B78-10226 04
- SILICON COMPOUNDS**
Low-cost high purity production
NPO-14198 B78-10050 04
- SILICON DIOXIDE**
High-temperature brazing of stainless steel
MSC-19459 B78-10112 08
High-temperature waterproofing for tiles
MSC-16773 B78-10135 08
High-temperature capacitive pressure transducer
LEWIS-13078 B78-10398 06
Accelerated purification of colloidal silica sols
MSC-16793 B78-10512 04
- SILICONE RESINS**
Cure-rate data for silicone adhesive
GSFC-12330 B78-10057 04
- SILICONE RUBBER**
No-warp potted circuits
MSC-19729 B78-10435 08
Deaerating high-viscosity silicon rubber
MSC-16694 B78-10514 04
- SILICONES**
Flame-retardant adhesive tape
MSC-16721 B78-10041 04
Cure-rate data for silicone adhesive
GSFC-12330 B78-10057 04
- SILVER CADMIUM BATTERIES**
Continuous process fabricates battery plaque
GSFC-12054 B78-10132 08
- SIMULATION**
Multipurpose system simulator
GSFC-12333 B78-10444 09
- SIMULATORS**
Directional laser velocimeter with doppler velocity simulator
LANGLEY-12176 B78-10029 03
Approach and landing simulation
LANGLEY-12060 B78-10091 06
28-Bit serial word simulator/monitor
MSC-16418 B78-10315 02
Simulator for training remote-manipulator operators
MSC-14921 B78-10415 07
Solar simulator test facility
M-FS-23972 B78-10477 03
- SINGLE CRYSTALS**
Precision cleaver for 'soft' crystals
GSFC-12291 B78-10348 04
- SINTERING**
Slurry-powder sintering furnace
LANGLEY-11423 B78-10293 08
- SIZE DETERMINATION**
Resizing algorithm for loaded structures
LANGLEY-12064 B78-10594 09
- SIZE SEPARATION**
Compact bypass-flow filter
MSC-18311 B78-10564 07
- SKIN (ANATOMY)**
Sweat collection capsule
ARC-11031 B78-10367 05
- SKIN GRAFTS**
Bacillus cereus strain MCN as a debriding agent
LANGLEY-12287 B78-10067 05
- SKY RADIATION**
Optics for natural lighting
LANGLEY-12333 B78-10189 03
- SLICING**
Precision cleaver for 'soft' crystals
GSFC-12291 B78-10348 04
- SLIPSTREAMS**
WAKE and WASH
LANGLEY-12262 B78-10093 06
- SLURRIES**
Continuous process fabricates battery plaque
GSFC-12054 B78-10132 08
Slurry-powder sintering furnace
LANGLEY-11423 B78-10293 08
- SMOKE ABATEMENT**
Fire-and smoke-retardant polyesters and elastomers
NPO-14053 B78-10058 04
- SODIUM**
Low-cost high purity production
NPO-14198 B78-10050 04
- SOL-GEL PROCESSES**
Predicting structures of cross-linked condensation polymers
NPO-14007 B78-10352 04
- SOLAR ARRAYS**
'PC fabrication' for silicon solar-cell arrays
NPO-13991 B78-10131 08
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NPO-14062 B78-10184 03
- SOLAR CELLS**
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NPO-14200 B78-10031 03
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NPO-14047 B78-10325 03
Power loss for high-voltage solar-cell arrays
LEWIS-12865 B78-10340 03
Photovoltaic systems test facility
LEWIS-13073 B78-10378 06
Process for growing thin polished silicon sheets
NPO-14172 B78-10434 08
Improved method of solar-cell assembly
LEWIS-12729 B78-10438 08
More efficient GaAs solar cells
LANGLEY-12216 B78-10479 03
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- Solar-electric geocentric transfer
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- SOLAR ENERGY**
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 M-FS-19206 878-10117 08
 Bench-top soldering aid for PC boards
 MSC-16274 878-10121 08
 High-vacuum, low-temperature bond for
 second-surface mirrors
 M-FS-23405 878-10124 08
 'PC fabrication' for silicon solar-cell
 arrays
 NPO-13991 878-10131 08
SOLENOID VALVES
 Latching solenoid for cryogenic valves
 MSC-18106 878-10418 07
SOLID PHASES
 High-gradient continuous-casting
 furnace
 LEWIS-12934 878-10425 08
SOLID ROCKET PROPELLANTS
 Predicting structures of cross-linked
 condensation polymers
 NPO-14007 878-10352 04
SOLID STATE DEVICES
 CMOS-array design-automation
 techniques
 M-FS-23762 878-10311 01
 Zone-refining encapsulated
 semiconductors
 M-FS-23902 878-10351 04
SOLIDIFICATION
 Controlling the growth of silicon sheets
 NPO-14295 878-10581 08
SOLUBILITY
 Positively charged membrane for urea
 dialysis
 NPO-14101 878-10241 05
SOLUTIONS
 Electroplating and stripping copper on
 molybdenum and niobium
 LEWIS-12151 878-10055 04

SOLVENT EXTRACTION

Coal mining with a liquid solvent
 NPO-14028 B78-10345 04

SOLVENTS

Low-temperature elastomer production and curing
 NPO-13899 B78-10346 04

SOUND FIELDS

Hybrid random-sound test-control system
 NPO-13900 B78-10025 02

SOUND TRANSMISSION

Airframe design for reducing cabin noise
 LANGLEY-12097 B78-10257 06

SOUND WAVES

Implantable digital hearing aid
 KSC-11009 B78-10373 05
 Predicting rotor rotation noise
 LANGLEY-12098 B78-10406 06

SPACE FLIGHT FEEDING

Automatic primate feeder
 LANGLEY-11586 B78-10246 05

SPACE SHUTTLE ORBITERS

Fuseholders allow fast system checkout
 MSC-16856 B78-10088 06

SPACECRAFT ELECTRONIC EQUIPMENT

Portable spark-gap arc generator
 LEWIS-12886 B78-10008 01

SPACECRAFT STABILITY

Improved notation controller
 GSFC-12273 B78-10383 06

SPACECRAFT TRAJECTORIES

Solar-electric geocentric transfer
 LEWIS-12939 B78-10403 06

SPARE PARTS

Spares-optimized model
 MSC-18015 B78-10446 09
 Computation of spare parts requirements
 MSC-16872 B78-10593 09

SPARK GAPS

Portable spark-gap arc generator
 LEWIS-12886 B78-10008 01

SPECIFICATIONS

Evaluation of an air solar collector
 M-FS-23978 B78-10336 03

SPECIMENS

Mounting procedure for geological samples
 MSC-18206 B78-10327 03
 Retainer for laboratory animals
 LANGLEY-12353 B78-10371 05
 Safe, durable soil sampler
 MSC-18171 B78-10577 07

SPECTRA

Oxygen and nitrogen raman spectra
 LEWIS-12849 B78-10361 04

SPECTRAL BANDS

Processing multispectral signals from a discrete-sensor array
 NPO-14211 B78-10442 09

SPECTRAL EMISSION

Custom blending of lamp phosphors
 MSC-16692 B78-10056 04

SPECTRAL SIGNATURES

Hybrid random-sound test-control system
 NPO-13900 B78-10025 02
 Measuring metallic concentrations in glycol solutions
 M-FS-23894 B78-10211 03
 Predicting crop production from satellite data
 GSFC-12379 B78-10595 09

SPECTROMETERS

Automatic gain-balancing circuit
 LANGLEY-12074 B78-10297 01

Improved fourier interference spectrometer
 NPO-14025 B78-10485 03

SPECTROPHOTOMETERS

Instrument measures many optical properties in visible and IR
 LANGLEY-12285 B78-10489 03

SPECTRORADIOMETERS

Cosine-corrected optical diffuser
 NPO-14288 B78-10322 03

SPECTROSCOPY

Pulsed NMR spectroscopy
 NPO-14023 B78-10175 03

SPECTRUM ANALYSIS

Automatic radio-transmission monitor
 NPO-13941 B78-10165 02
 Wideband digital spectrum analyzer
 NPO-14394 B78-10468 02
 Improved fourier interference spectrometer
 NPO-14025 B78-10485 03

SPEED CONTROL

Shaft speed control
 NPO-14170 B78-10416 07

SPEED INDICATORS

'Pseudobackscatter' laser velocimeter
 ARC-10970 B78-10318 03
 Shock-swallowing air sensor
 FRC-10107 B78-10537 06
 Measuring projectile speed
 LANGLEY-12387 B78-10538 06
 Miniature velocimeter
 LANGLEY-12281 B78-10539 06

SPIN RESONANCE

Pulsed NMR spectroscopy
 NPO-14023 B78-10175 03

SPIN-LATTICE RELAXATION

Pulsed NMR spectroscopy
 NPO-14023 B78-10175 03

SPINDLES

Improved transformer-winding method
 NPO-14243 B78-10282 08

SPINE

A probe for blood-vessel and spinal interiors
 NPO-14132 B78-10242 05

SPIRAL WRAPPING

Nylon screws make inexpensive coil forms
 MSC-16912 B78-10003 01

SPlicing

Splicing shielded cables
 MSC-18297 B78-10453 01

SPLINES

'Nonfloating' universal joint
 MSC-19546 B78-10108 07

SPOILER SLOT AILERONS

Aircraft trailing vortex hazard alleviators
 LANGLEY-12034 B78-10272 07

SPONGES (MATERIALS)

No-warp potted circuits
 MSC-19729 B78-10435 08

SPONTANEOUS COMBUSTION

Directory of fire research specialists
 LEWIS-13123 B78-10399 06

SPRAYED COATINGS

Simplified tooling for spray masking
 MSC-16927 B78-10136 08

SPRAYERS

Extension handle for spray cans
 KSC-11083 B78-10576 07

SPRAYING

Simplified tooling for spray masking
 MSC-16927 B78-10136 08

SPRINGS (ELASTIC)

Spring control of wire harness loops
 MSC-18246 B78-10411 07

SPUTTERING

Ion-beam texturing of materials
 LEWIS-12996 B78-10357 04
 Biomedical applications of ion-beam technology
 LEWIS-12807 B78-10363 05

STABILIZATION

Improved notation controller
 GSFC-12273 B78-10383 06

STABILIZERS (AGENTS)

Fast-drying coating
 MSC-16056 B78-10060 04

STAINLESS STEELS

Form die and glide plates for vacuum brazing
 MSC-16549 B78-10113 08
 Internal grid for release of brazing retorts
 MSC-19472 B78-10114 08
 Vacuum control for brazing stainless steel
 MSC-19457 B78-10115 08
 Mechanical properties of 18-2 Mn stainless steel
 M-FS-23843 B78-10229 04
 Nitronic 60: a new alloy
 M-FS-23844 B78-10230 04
 Embrittlement proof nickel-alloy bellows
 M-FS-19331 B78-10349 04

STANDARDIZATION

Standardized gas-temperature probes
 LEWIS-13059 B78-10392 06

STANDARDS

Mass spectrometer calibration standard
 NPO-14097 B78-10249 06
 Calibration standards for PIND tests
 MSC-18169 B78-10388 06

STARK EFFECT

Improved 'spectrophone'
 NPO-14143 B78-10167 03

STATIC DISCHARGERS

Portable spark-gap arc generator
 LEWIS-12886 B78-10008 01

STATIC ELECTRICITY

Antistatic additive for polyimide films
 NPO-14232 B78-10220 04
 Antistatic coating for acrylics
 NPO-13867 B78-10509 04

STATIC PRESSURE

Orifice calibration module
 LANGLEY-12269 B78-10393 06
 Static-pressure probe for small geometries
 LANGLEY-11552 B78-10395 06

STATISTICAL DECISION THEORY

Model for redundant-sensor signal errors
 MSC-16715 B78-10146 09

STATISTICAL TESTS

Real-time instrument averages 100 data sets
 LEWIS-13093 B78-10534 06

STEAM

Easily installed insulation for steamfittings
 MSC-18277 B78-10589 08

STEELS

Processing high-strength steel alloys
 MSC-16172 B78-10441 08

STEERABLE ANTENNAS

Control of small phased-array antennas
 MSC-14938 B78-10166 02

- STERILIZATION**
 Self-sterilizing canister
 NPO-14237 B78-10064 05
 Corona-discharge air-purification system
 ARC-10975 B78-10350 04
 resterilizable electrode for
 electrosurgery
 HQN-10915 B78-10370 05
- STIMULATED EMISSION**
 Vacuum-ultraviolet laser uses superfluid
 helium
 NPO-13993 B78-10323 03
- STIRLING CYCLE**
 Stirling-engine design manual
 LEWIS-13098 B78-10580 07
- STOMACH**
 Antihistamines reduce ulceration
 produced by indomethacin
 ARC-11118 B78-10366 05
- STOPPING**
 Device for pitching off metal tubes
 GSFC-12274 B78-10410 07
- STORAGE BATTERIES**
 Glass tubes for protecting solar cells
 NPO-14200 B78-10031 03
- STORAGE TANKS**
 Solar hot-water system
 M-FS-25043 B78-10495 03
- STRAIN GAGES**
 Improved strain-gage calibration
 MSC-16852 B78-10074 06
 Compact piston-position sensor
 LEWIS-12392 B78-10102 07
 Ultrathin films as photomechanical
 transducer
 NPO-14363 B78-10491 03
- STRANDS**
 Ultrafine PBI fibers and yarns
 ARC-11221 B78-10504 04
- STRAPS**
 Human arm may act as antenna
 ARC-11195 B78-10161 02
 Bend-absorbing clamp
 MSC-16971 B78-10575 07
- STRESS ANALYSIS**
 Stress analysis under component relative
 interference fit
 LEWIS-12911 B78-10261 06
 Structural performance analysis and
 redesign
 LANGLEY-12213 B78-10264 06
 Resizing algorithm for loaded structures
 LANGLEY-12064 B78-10594 09
- STRESS CONCENTRATION**
 Gear-tooth fatigue-strength estimates
 MSC-18167 B78-10573 07
- STRESS CORROSION**
 Mechanical properties of 18-2 Mn
 stainless steel
 M-FS-23843 B78-10229 04
 Nitronic 60: a new alloy
 M-FS-23844 B78-10230 04
- STRESSES**
 Stress analysis under component relative
 interference fit
 LEWIS-12911 B78-10261 06
- STRIP TRANSMISSION LINES**
 Microstrip backfire antenna
 LANGLEY-12172 B78-10019 02
- STRUCTURAL ANALYSIS**
 Stress analysis under component relative
 interference fit
 LEWIS-12911 B78-10261 06
 Structural performance analysis and
 redesign
 LANGLEY-12213 B78-10264 06
- Analysis of linear viscoelastic structures
 NPO-13197 B78-10266 06
 Calculation of planar-truss modal
 frequencies
 LANGLEY-12137 B78-10382 06
 Nacelle incremental drag
 LEWIS-12786 B78-10400 06
 Plotting max/min data envelopes
 MSC-18016 B78-10597 09
- STRUCTURAL DESIGN**
 Structural performance analysis and
 redesign
 LANGLEY-12213 B78-10264 06
 Calculation of planar-truss modal
 frequencies
 LANGLEY-12137 B78-10382 06
 Lattice panels with high structural
 efficiency
 LANGLEY-11898 B78-10426 08
 Low-cost graphite/epoxy structural
 panels
 M-FS-23871 B78-10427 08
 Lightweight conical antenna reflector
 NPO-13552 B78-10472 02
 Resizing algorithm for loaded structures
 LANGLEY-12064 B78-10594 09
- STRUCTURAL DESIGN CRITERIA**
 Design of transmission shafting
 LEWIS-12965 B78-10107 07
- STRUCTURAL FAILURE**
 Design of transmission shafting
 LEWIS-12965 B78-10107 07
- STRUCTURAL MEMBERS**
 Analysis of cracked orthotropic sheets
 LANGLEY-12288 B78-10405 06
 Lattice panels with high structural
 efficiency
 LANGLEY-11898 B78-10426 08
 Reducing weld peaking in aluminum
 M-FS-23973 B78-10433 08
- SUBMINIATURIZATION**
 Subminiature hydraulic actuator
 LANGLEY-11522 B78-10269 07
- SUBSONIC FLOW**
 Flow velocities and streamlines
 LEWIS-12966 B78-10094 06
 Flow in axisymmetric ducts with struts
 LEWIS-12798 B78-10556 06
- SUBSTITUTES**
 Spares-optimized model
 MSC-18015 B78-10446 09
- SUBSTRATES**
 Forming 'dynamic' membranes on
 stainless steel
 MSC-18172 B78-10513 04
- SUNLIGHT**
 Inexpensive, portable, integrating solar
 energy meter
 LEWIS-12804 B78-10188 03
 Optics for natural lighting
 LANGLEY-12333 B78-10189 03
 Solar simulator test facility
 M-FS-23972 B78-10477 03
- SUPERFLUIDITY**
 Vacuum-ultraviolet laser uses superfluid
 helium
 NPO-13993 B78-10323 03
- SUPERHIGH FREQUENCIES**
 Real-time monitoring of crustal
 deformations
 NPO-14124 B78-10034 03
- SUPERSONIC COMBUSTION RAMJET
 ENGINES**
 Convectively cooled structures
 LANGLEY-12347 B78-10404 06
- SUPERSONIC DRAG**
 Nacelle incremental drag
 LEWIS-12786 B78-10400 06
- SUPERSONICS**
 Shock-swallowing air sensor
 FRC-10107 B78-10537 06
- SUPPORTS**
 Vibration-free thermal link
 GSFC-12297 B78-10169 03
 Gentle support stands for fluid-line
 mockups
 MSC-16479 B78-10291 08
 Rigid 'Sling' for topheavy loads
 GSFC-12359 B78-10574 07
- SURFACE DISTORTION**
 Detecting surface deformations
 'photographically'
 MSC-16156 B78-10547 06
- SURFACE ENERGY**
 Biocompatibility of surgical implants
 NPO-14291 B78-10368 05
- SURFACE FINISHING**
 Boron trifluoride coatings for plastics
 ARC-11057 B78-10043 04
 Surface examination of small particles
 LEWIS-12842 B78-10075 06
 Ion-beam, texturing of materials
 LEWIS-12996 B78-10357 04
 Biomedical applications of ion-beam
 technology
 LEWIS-12807 B78-10363 05
 Holding fixture for variable-contour
 parts
 MSC-16270 B78-10429 08
 Process for growing thin polished silicon
 sheets
 NPO-14172 B78-10434 08
 Breather cloth for vacuum curing
 MSC-18063 B78-10440 08
 Coating for hot sliding seals
 MSC-16529 B78-10562 07
 Electroplated 'cold patch' for critical
 parts
 M-FS-19401 B78-10584 08
- SURFACE LAYERS**
 Applying uniform adhesive coatings
 MSC-19462 B78-10583 08
- SURFACE PROPERTIES**
 Ultra-high-strength boron fibers
 LEWIS-12739 B78-10051 04
- SURFACE TEMPERATURE**
 Predicting surface heat flux
 MSC-16095 B78-10090 06
 Orbital heat rate package
 M-FS-23980 B78-10554 06
- SURGERY**
 Biocompatibility of surgical implants
 NPO-14291 B78-10368 05
 Intraocular pressure reduction and
 regulation
 LEWIS-12723 B78-10523 05
- SURGICAL INSTRUMENTS**
 resterilizable electrode for
 electrosurgery
 HQN-10915 B78-10370 05
 Flow-compensating pressure regulator
 LEWIS-12718 B78-10522 05
- SURVEILLANCE RADAR**
 Air-traffic surveillance systems
 NPO-14173 B78-10313 02
- SWAGING**
 Riveting-force gage
 NPO-13477 B78-10432 08
- SWEAT**
 Sweat collection capsule
 ARC-11031 B78-10367 05

SWITCHES

High-power RF switch
NPO-14229 B78-10151 01
Easily-wired toggle switch
MSC-18102 B78-10301 01

SWITCHING

Automatic circuit interrupter
MSC-16697 B78-10300 01

SWITCHING CIRCUITS

Symmetric voltage-controlled variable resistance
MSC-16685 B78-10148 01
IC implementation of crossbar switches
NPO-13837 B78-10153 01
High-Speed, high-power, switching transistor
LEWIS-13021 B78-10298 01
Improved driver for capacitive loads
LANGLEY-11609 B78-10304 01
Power-switch dV/dt sensing
MSC-16707 B78-10307 01
Phase-shift array, arbitrary and continuous through 360 deg
LANGLEY-12272 B78-10308 01
One-third selection for matrix-addressing ferroelectrics
LANGLEY-11993 B78-10456 01
Dynamic braking of bidirectional motors
ARC-11194 B78-10578 07

SWITCHING THEORY

Representation of multivalued logic functions
NPO-13760 B78-10596 09

SWIVELS

Rigid coupling is also flexible
MSC-16488 B78-10098 07

SYMMETRY

Compact antenna has symmetrical radiation pattern
ARC-11189 B78-10473 02

SYNCHRONISM

Synchronous transfer circuits for redundant systems
NPO-14162 B78-10157 01
Chopper-stabilized phase detector
MSC-16461 B78-10163 02
Simplified phase detector
NPO-13395 B78-10457 01

SYNCHRONIZED OSCILLATORS

Digital phase shifter synchronizes local oscillators
MSC-16695 B78-10011 01
Synchronous transfer circuits for redundant systems
NPO-14162 B78-10157 01

SYNTHESIZERS

Voice-output solar energy reporter
LEWIS-12947 B78-10022 02

SYNTHETIC FIBERS

Ultrafine PBI fibers and yarns
ARC-11221 B78-10504 04

SYNTHETIC FUELS

Hydrogen enrichment of synthetic fuel
M-FS-23279 B78-10039 04

SYSTEM FAILURES

Preventing radio-paging system tieup
MSC-19696 B78-10024 02
Synchronous transfer circuits for redundant systems
NPO-14162 B78-10157 01
Detecting servo failures with software
FRC-11003 B78-10396 06

SYSTEMS ANALYSIS

Hydraulic dynamic analysis
MSC-16795 B78-10095 06

Marshall system for aerospace simulation
M-FS-22672 B78-10296 09
Multipurpose system simulator
GSFC-12333 B78-10444 09

T

TAIL ASSEMBLIES

Spring control of wire harness loops
MSC-18246 B78-10411 07

TANKS (CONTAINERS)

Damage-detection system for LNG carriers
LANGLEY-11463 B78-10250 06

TANTALUM

Ion-beam texturing of materials
LEWIS-12996 B78-10357 04

TAPE RECORDERS

Portable data system
ARC-11136 B78-10316 02

TEFLON (TRADEMARK)

Selection standard for FEP films for solar energy
MSC-16999 B78-10190 03
High-pressure cryogenic cylinder seal
M-FS-19335 B78-10421 07

TELECOMMUNICATION

Adaptive polarization separation experiments
LANGLEY-12196 B78-10006 01
Simplified data compressor
NPO-14041 B78-10023 02
Lightweight conical antenna reflector
NPO-13552 B78-10472 02
Telecommunications network optimization
NPO-14486 B78-10476 02

TELEMETRY

Wideband EMG telemetry system
ARC-11209 B78-10375 05
Measuring radio-signal power accurately
NPO-13373 B78-10464 02

TELEPHONY

Voice-output solar energy reporter
LEWIS-12947 B78-10022 02

TELEPRINTERS

Portable data system
ARC-11136 B78-10316 02

TELEVISION CAMERAS

Infrared-enhanced TV for fire detection
M-FS-19380 B78-10172 03
Processing multispectral signals from a discrete-sensor array
NPO-14211 B78-10442 09

TELEVISION EQUIPMENT

Video scrambler/descrambler
MSC-16843 B78-10013 02

TELEVISION SYSTEMS

Simulator for training remote-manipulator operators
MSC-14921 B78-10415 07

TELEVISION TRANSMISSION

Video scrambler/descrambler
MSC-16843 B78-10013 02

TEMPERATURE

Low-chromium stainless steels
LEWIS-12543 B78-10046 04
High-temperature ca facitive pressure transducer
LEWIS-13078 B78-10398 06

TEMPERATURE CONTROL

Controlled freezing of biological samples
GSFC-12173 B78-10065 05
Thermal-control canister
GSFC-12253 B78-10079 06
Thermal compensator for helium refrigerators
GSFC-12168 B78-10082 06
Temperature stabilization of microwave ferrite devices
MSC-16833 B78-10152 01
Prototype solar-heating system
M-FS-23916 B78-10180 03
Residential solar-heating system
M-FS-23909 B78-10181 03
Multichannel temperature control for solar heating
M-FS-23775 B78-10182 03
Prototype residential solar-energy system
M-FS-23932 B78-10191 03
Prototype residential solar-energy system-engineering analysis
M-FS-23929 B78-10192 03
Residential solar-heating system - design brochure
M-FS-23933 B78-10193 03
Solar-heating module
M-FS-23925 B78-10196 03
Solar-powered hot-water system
NPO-14270 B78-10324 03
Modular heat-pipe-radiator panel
MSC-16625 B78-10328 03
Prototype solar-heating system design package
M-FS-23945 B78-10332 03
Prototype residential solar-energy system-design package
M-FS-23953 B78-10333 03
Prototype residential solar-energy system-installation package
M-FS-23956 B78-10334 03
Automated controller for liquid-cooled garments
MSC-18055 B78-10365 05
Temperature-gradient oven
M-FS-23919 B78-10390 06
Automated temperature-cycling apparatus
LANGLEY-12310 B78-10391 06
Infrared scanners detect thermal gradients in building walls
LANGLEY-12157 B78-10480 03
Solar-powered hot-air system
M-FS-23976 B78-10481 03
Thermoelectrically-cooled erature probe
MSC-18192 B78-10484 03
Solar-heating system design data brochure
M-FS-23977 B78-10492 03
Solar-heating system performance tests
M-FS-25021 B78-10493 03
Solar-heating system
M-FS-25022 B78-10494 03
Residential solar-heating system-design package
M-FS-25071 B78-10496 03
Development and testing of a hot-air solar collector
M-FS-23997 B78-10497 03
Design and installation of a flat-plate solar collector
M-FS-25010 B78-10498 03
Liquid solar collector-performance tests
M-FS-25082 B78-10499 03

- Coated-felt thermal insulation
 - MSC-12737 878-10510 04
- Metallic thermal seal
 - MSC-18135 878-10566 07
- Localized cooling of electronic components
 - LANGLEY-11955 878-10569 07
- TEMPERATURE DISTRIBUTION**
 - Wide-temperature corrosion-resistant pressure regulator
 - NPO-13776 878-10274 07
 - Orbital heat rate package
 - M-FS-23980 878-10554 06
- TEMPERATURE EFFECTS**
 - Testing composite sheets at high temperatures
 - MSC-16237 878-10252 06
 - Effects of moisture on graphite/epoxy composites
 - MSC-18045 878-10360 04
 - Automated temperature-cycling apparatus
 - LANGLEY-12310 878-10391 06
- TEMPERATURE GRADIENTS**
 - Practical and efficient magnetic heat pump
 - LEWIS-12508 878-10170 03
 - Temperature-gradient oven
 - M-FS-23919 878-10390 06
 - High-gradient continuous-casting furnace
 - LEWIS-12934 878-10425 08
 - Ocean thermal plant
 - KSC-11034 878-10482 03
- TEMPERATURE MEASUREMENT**
 - Body/bone-marrow differential-temperature sensor
 - NPO-14121 878-10066 05
 - Thermocouples measure very-hot gas temperatures
 - LEWIS-12843 878-10076 06
 - Infrared scanners for temperature measurement in wind tunnels
 - LANGLEY-12171 878-10077 06
 - Calibration target for temperature radiometer
 - LANGLEY-12239 878-10083 06
 - Oxygen and nitrogen raman spectra
 - LEWIS-12849 878-10361 04
 - Hybrid temperature-monitoring circuit
 - MSC-18231 878-10525 05
- TEMPERATURE MEASURING INSTRUMENTS**
 - Standardized gas-temperature probes
 - LEWIS-13059 878-10392 06
 - Miniature thermocouple disconnect
 - LANGLEY-12013 878-10535 06
- TEMPERATURE PROBES**
 - Body/bone-marrow differential-temperature sensor
 - NPO-14121 878-10066 05
- TEMPERATURE SENSORS**
 - Body/bone-marrow differential-temperature sensor
 - NPO-14121 878-10066 05
- TEMPLATES**
 - Circuit-lead trimming template
 - MSC-16589 878-10439 08
- TENSILE PROPERTIES**
 - Quick-and-easy shear-load testing
 - MSC-16765 878-10073 06
 - Mechanical properties of 18-2 Mn stainless steel
 - M-FS-23843 878-10229 04
 - Nitronic 60: a new alloy
 - M-FS-23844 878-10230 04
- Hydrogen embrittlement of nickel
 - ARC-10966 878-10231 04
- TENSILE STRENGTH**
 - Wrought nickel-base superalloy
 - LEWIS-12844 878-10045 04
 - Low-chromium stainless steels
 - LEWIS-12543 878-10046 04
 - Partial interlaminar separation for composites
 - LANGLEY-12065 878-10052 04
 - Quick-and-easy shear-load testing
 - MSC-16765 878-10073 06
- TENSILE TESTS**
 - 'Gentle' holder for brittle ceramics
 - MSC-19645 878-10552 06
- TENSION**
 - Improved strain-gage calibration
 - MSC-16852 878-10074 06
- TERRESTRIAL RADIATION**
 - Terrestrial photovoltaic measurements
 - LEWIS-13057 878-10310 01
 - Estimating regional heat flux from scanning radiometer data
 - LANGLEY-12158 878-10329 03
- TEST CHAMBERS**
 - Automated temperature-cycling apparatus
 - LANGLEY-12310 878-10391 06
 - Compression testing of flammable liquids
 - MSC-16121 878-10548 06
 - Low partial discharge vacuum feedthrough
 - GSFC-12347 878-10559 07
- TEST EQUIPMENT**
 - Measuring oxide trapping parameters in MOS structure
 - NPO-14120 878-10002 01
 - Quick-and-easy shear-load testing
 - MSC-16765 878-10073 06
 - Calibration standards for PIND tests
 - MSC-18169 878-10388 06
- TEST FACILITIES**
 - Strobe-margin test for plated memory systems
 - M-FS-23838 878-10154 01
 - Universal test fixture for solar cells
 - NPO-14062 878-10184 03
 - Accelerated-weathering test-system for solar cells
 - NPO-14061 878-10185 03
 - Testing of three hot-air solar collectors
 - M-FS-23887 878-10201 03
 - Flat-plate liquid solar collector
 - M-FS-23912 878-10205 03
 - Testing composite sheets at high temperatures
 - MSC-16237 878-10252 06
 - Photovoltaic systems test facility
 - LEWIS-13073 878-10378 06
 - Testing integrated circuits by photoexcitation
 - M-FS-23943 878-10451 01
 - Solar simulator test facility
 - M-FS-23972 878-10477 03
- TEST STANDS**
 - Testing composite sheets at high temperatures
 - MSC-16237 878-10252 06
- TEST VEHICLES**
 - Test-vehicle cycle programmer
 - LEWIS-12977 878-10020 02
- TETHERLINES**
 - Modified pipe extension safely releases chain binders
 - MSC-16937 878-10103 07
- TEXTURES**
 - Biomedical applications of ion-beam technology
 - LEWIS-12807 878-10363 05
 - Ion-beam-textured graphite
 - LEWIS-12724 878-10506 04
- THERMAL CONDUCTIVITY**
 - Predicting surface heat flux
 - MSC-16095 878-10090 06
 - Vibration-free thermal link
 - GSFC-12297 878-10169 03
- THERMAL CONTROL COATINGS**
 - Electrically-conducting thermal-control coating
 - GSFC-12207 878-10044 04
 - Selection standard for FEP films for solar energy
 - MSC-16999 878-10190 03
 - Breather cloth for vacuum curing
 - MSC-18063 878-10440 08
- THERMAL CYCLING TESTS**
 - Temperature-gradient oven
 - M-FS-23919 878-10390 06
 - Automated temperature-cycling apparatus
 - LANGLEY-12310 878-10391 06
 - No-warp potted circuits
 - MSC-19729 878-10435 08
- THERMAL DEGRADATION**
 - Brazed boron-silicon carbide/aluminum structural panels
 - LANGLEY-12244 878-10221 04
- THERMAL ENVIRONMENTS**
 - Thermal-control canister
 - GSFC-12253 878-10079 06
 - Orbital heat rate package
 - M-FS-23980 878-10554 06
- THERMAL INSULATION**
 - Improved thermal-tile barrier
 - MSC-16929 878-10133 08
 - Special weave for insulating fabrics
 - MSC-16380 878-10288 08
 - Installing fiber insulation in tight spaces
 - MSC-16934 878-10289 08
 - Infrared scanners detect thermal gradients in building walls
 - LANGLEY-12157 878-10480 03
 - Coated-felt thermal insulation
 - MSC-12737 878-10510 04
 - Metallic thermal seal
 - MSC-18135 878-10566 07
 - Fastener for thermal insulation blankets
 - MSC-18253 878-10571 07
 - Contouring pile-brush seals
 - MSC-16231 878-10588 08
 - Easily installed insulation for steamfittings
 - MSC-18277 878-10589 08
- THERMAL MAPPING**
 - Energy conservation, using remote thermal scanning
 - LEWIS-12812 878-10178 03
- THERMAL PROTECTION**
 - Electrically-conducting thermal-control coating
 - GSFC-12207 878-10044 04
- THERMAL RESISTANCE**
 - Flame-retardant adhesive tape
 - MSC-16721 878-10041 04
 - New adhesive withstands temperature extremes
 - GSFC-12345 878-10042 04
 - Coating for hot sliding seals
 - MSC-16529 878-10562 07

THERMAL SHOCK

- Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07
- THERMAL STABILITY**
Thermal-control canister
GSFC-12253 B78-10079 06
- THERMAL STRESSES**
Resizing algorithm for loaded structures
LANGLEY-12064 B78-10594 09
- THERMOCOUPLES**
Controlled freezing of biological samples
GSFC-12173 B78-10065 05
Thermocouples measure very-hot gas temperatures
LEWIS-12843 B78-10076 06
Calibration target for temperature radiometer
LANGLEY-12239 B78-10083 06
Predicting surface heat flux
MSC-16095 B78-10090 06
Internal grid for release of brazing retorts
MSC-19472 B78-10114 08
Standardized gas-temperature probes
LEWIS-13059 B78-10392 06
Miniature thermocouple disconnect
LANGLEY-12013 B78-10535 06
- THERMODYNAMIC EFFICIENCY**
Thermal performance of shaft bearing system
LEWIS-12761 B78-10263 06
- THERMODYNAMIC PROPERTIES**
Thermal hydraulic analyzer
MSC-18014 B78-10265 06
Graphics program for charts
LEWIS-12811 B78-10598 09
- THERMOELECTRIC COOLING**
Thermoelectrically-cooled variable-temperature probe
MSC-18192 B78-10484 03
- THERMOELECTRIC GENERATORS**
Ocean thermal plant
KSC-11034 B78-10482 03
- THERMOPILES**
Voice-output solar energy reporter
LEWIS-12947 B78-10022 02
- THERMOSETTING RESINS**
Cure-rate data for silicone adhesive
GSFC-12330 B78-10057 04
Response of graphite/epoxy composites to moisture
MSC-16899 B78-10228 04
- THERMOSTATS**
Multichannel temperature control for solar heating
M-FS-23775 B78-10182 03
- THICKNESS**
Calculating wire-bundle diameter
MSC-16378 B78-10119 08
Improved nucleonic coal-thickness monitor
M-FS-23725 B78-10344 04
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 B78-10505 04
- THIN FILMS**
Mossbauer studies of bulk and thin-film FeTe
M-FS-23773 B78-10059 04
Control of dielectric film deposition
LEWIS-13092 B78-10430 08
Preparing thin aluminum films for adhesive bonding
NPO-14357 B78-10591 08

THIN PLATES

- Process for growing thin polished silicon sheets
NPO-14172 B78-10434 08
Controlling the growth of silicon sheets
NPO-14295 B78-10581 08
- THIN WALLED SHELLS**
Wrench for thin-walled cylinders
LANGLEY-12286 B78-10579 07
- THREADS**
Nylon screws make inexpensive coil forms
MSC-16912 B78-10003 01
Antibackoff lock for nuts and bolts
MSC-16472 B78-10409 07
Quick-connect threaded attachment joint
LANGLEY-12232 B78-10414 07
- THRUST BEARINGS**
Dynamics of gas-thrust bearings
LEWIS-12754 B78-10097 06
Improved gas thrust bearings
LEWIS-12569 B78-10413 07
- THUNDERSTORMS**
System for monitoring lightning strikes
KSC-11018 B78-10475 02
- THYRISTORS**
Gate-assisted turn-off thyristor
LEWIS-12535 B78-10004 01
High-Speed, high-power, switching transistor
LEWIS-13021 B78-10298 01
- TIDE POWERED GENERATORS**
Wind/water energy converter
GSFC-12361 B78-10483 03
- TILES**
Improved thermal-tile barrier
MSC-16929 B78-10133 08
Tile-bonding tool
KSC-11053 B78-10134 08
High-temperature waterproofing for tiles
MSC-16773 B78-10135 08
- TIME LAG**
Preventing radio-paging system tieup
MSC-19696 B78-10024 02
- TIME MEASUREMENT**
Measuring projectile speed
LANGLEY-12387 B78-10538 06
- TIMING DEVICES**
Simple digital pulse-programing circuit
NPO-13747 B78-10299 01
Hybrid clock generator
MSC-18228 B78-10530 05
- TIN ALLOYS**
High-gradient continuous-casting furnace
LEWIS-12934 B78-10425 08
- TISSUES (BIOLOGY)**
Controlled freezing of biological samples
GSFC-12173 B78-10065 05
- TOOLING**
Simplified tooling for spray masking
MSC-16927 B78-10136 08
- TOOLS**
Simple tool removes IC flat packs
MSC-16058 B78-10010 01
Tool simplifies weld preparation of aluminum
MSC-16992 B78-10123 08
Improved thermal-tile barrier
MSC-16929 B78-10133 08
Compact ratchet wrench
M-FS-24252 B78-10273 07
Adhesive-removal tool
MSC-19498 B78-10279 07

- Safe, durable soil sampler
MSC-18171 B78-10577 07
Wrench for thin-walled cylinders
LANGLEY-12286 B78-10579 07
- TOPOGRAPHY**
Ocean-wave ray or crest diagrams in shoaling waters
LANGLEY-12380 B78-10341 03
- TORQUE**
Design of transmission shafting
LEWIS-12965 B78-10107 07
Transmitting rotary motion at an angle
MSC-19483 B78-10561 07
- TORQUEMETERS**
Combination force and angular-deflection indicator
MSC-16155 B78-10070 06
Ultrasonic extensometer measures bolt preload
M-FS-19337 B78-10271 07
- TORSIONAL STRESS**
Noncontact measurement of angular deflection
LANGLEY-12178 B78-10071 06
- TOUGHNESS**
Partial interlaminar separation for composites
LANGLEY-12065 B78-10052 04
- TOWED BODIES**
Scale parachute fabrication
M-FS-23139 B78-10141 08
- TOXIC HAZARDS**
Cryostat safety tent
GSFC-12206 B78-10080 06
- TOXICITY**
Toxic substances handbook
LEWIS-13124 B78-10359 04
Directory of fire research specialists
LEWIS-13123 B78-10399 06
- TRACE CONTAMINANTS**
High-temperature brazing of stainless steel
MSC-19459 B78-10112 08
Multiple-sample holder for IC testing
NPO-14314 B78-10540 06
- TRACE ELEMENTS**
Improved epoxy adhesive with radiographic tracer
MSC-18020 B78-10225 04
- TRACKING (POSITION)**
Air-traffic surveillance systems
NPO-14173 B78-10313 02
- TRACKING FILTERS**
Chopper-stabilized phase detector
MSC-16461 B78-10163 02
- TRACKING RADAR**
Air-traffic surveillance systems
NPO-14173 B78-10313 02
- TRACTORS**
Aerodynamic design lowers truck fuel consumption
FRC-11015 B78-10069 06
- TRAFFIC CONTROL**
Optical traffic-sensing concept
NPO-13603 B78-10021 02
- TRAILERS**
Aerodynamic design lowers truck fuel consumption
FRC-11015 B78-10069 06
- TRAINING DEVICES**
Simulator for training remote-manipulator operators
MSC-14921 B78-10415 07
- TRAINING SIMULATORS**
Custom blending of lamp phosphors
MSC-16692 B78-10056 04

TRAJECTORY ANALYSIS

Solar-electric geocentric transfer
LEWIS-12939 B78-10403 06

TRANSDUCERS

Improved myocardium transducer
NPO-14107 B78-10372 05

Photovoltaic systems test facility
LEWIS-13073 B78-10378 06

High-temperature microphone system
LANGLEY-12375 B78-10384 06

A solid-state phase-insensitive ultrasonic transducer
LANGLEY-12304 B78-10385 06

Electronically-scanned pressure measurement system
LANGLEY-12386 B78-10394 06

High-temperature capacitive pressure transducer
LEWIS-13078 B78-10398 06

Noncontacting valve-position indicator
MSC-16048 B78-10412 07

Ultrathin films as photomechanical transducer
NPO-14363 B78-10491 03

High-sampling-rate pressure transducer has in situ calibration
LANGLEY-12230 B78-10536 06

TRANSFORMERS

Improved transformer-winding method
NPO-14243 B78-10282 08

Bonding core mating surfaces improves transformer
NPO-13855 B78-10283 08

TRANSIENT LOADS

Performance optimizing
LANGLEY-11930 B78-10096 06

TRANSISTOR CIRCUITS

Bench-top soldering aid for PC boards
MSC-16274 B78-10121 08

Symmetric voltage-controlled variable resistance
MSC-16685 B78-10148 01

TRANSISTORS

High-Speed, high-power, switching transistor
LEWIS-13021 B78-10298 01

All-ion-implantation process for integrated circuits
M-FS-23995 B78-10590 08

TRANSMISSION

Coaxial isolator has versatile interface
MSC-16908 B78-10009 01

TRANSMISSION EFFICIENCY

Selection standard for FEP films for solar energy
MSC-16999 B78-10190 03

TRANSMISSION LINES

Power-switch dV/dt sensing
MSC-16707 B78-10307 01

Splicing shielded cables
MSC-18297 B78-10453 01

TRANSMITTANCE

Selection standard for FEP films for solar energy
MSC-16999 B78-10190 03

TRANSMITTERS

Wideband EMG telemetry system
ARC-11209 B78-10375 05

Determining the response of an FM receiver
MSC-16751 B78-10465 02

TRANSONIC FLOW

Flow velocities and streamlines
LEWIS-12966 B78-10094 06

TRANSPARENCE

Abrasion-resistant antireflective coating for polycarbonate
ARC-11047 B78-10054 04

Fire-retardant epoxy polymers
ARC-11182 B78-10218 04

Scratch resistant plastic lenses
ARC-11039 B78-10519 04

TRANSPORT PROPERTIES

Graphics program for charts
LEWIS-12811 B78-10598 09

TRANSPORTATION

Portable data system
ARC-11136 B78-10316 02

TRAPPING

Measuring oxide trapping parameters in MOS structure
NPO-14120 B78-10002 01

TRIETHYL COMPOUNDS

Chemical agent boosts natural-rubber output
NPO-14185 B78-10358 04

TRUCKS

Aerodynamic design lowers truck fuel consumption
FRC-11015 B78-10069 06

Modified pipe extension safely releases chain binders
MSC-16937 B78-10103 07

TRUSSES

Calculation of planar-truss modal frequencies
LANGLEY-12137 B78-10382 06

Rigid 'Sling' for topheavy loads
GSFC-12359 B78-10574 07

TUMBLING MOTION

Tumbling-vehicle entry heating
M-FS-23712 B78-10555 06

TUNERS

Low-power tuner for lasers
M-FS-23863 B78-10486 03

TUNGSTEN

Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07

TURBIDITY

Compact turbidity meter
KSC-11063 B78-10545 06

TURBINE BLADES

Edge geometry of turbomachine blades
LEWIS-12979 B78-10262 06

TURBINE ENGINES

Oxygen and nitrogen raman spectra
LEWIS-12849 B78-10361 04

TURBINES

Edge geometry of turbomachine blades
LEWIS-12979 B78-10262 06

Energy conversion alternatives study
LEWIS-13096 B78-10330 03

TURBOGENERATORS

Ocean thermal plant
KSC-11034 B78-10482 03

TURBOMACHINE BLADES

Edge geometry of turbomachine blades
LEWIS-12979 B78-10262 06

TURBOMACHINERY

Flow velocities and streamlines
LEWIS-12966 B78-10094 06

TURBULENT BOUNDARY LAYER

Internal and external 2-d boundary layer flows
LEWIS-13009 B78-10260 06

TURBULENT FLOW

Flow in axisymmetric ducts with struts
LEWIS-12798 B78-10556 06

TURBULENT WAKES

Aircraft trailing vortex hazard alleviators
LANGLEY-12034 B78-10272 07

TWO DIMENSIONAL BOUNDARY LAYER

Internal and external 2-d boundary layer flows
LEWIS-13009 B78-10260 06

U**ULCERS**

Antihistamines reduce ulceration produced by indomethacin
ARC-11118 B78-10366 05

ULTRAHIGH FREQUENCIES

Real-time monitoring of crustal deformations
NPO-14124 B78-10034 03

ULTRASONIC AGITATION

Surface examination of small particles
LEWIS-12842 B78-10075 06

ULTRASONIC TESTS

Calibration method for an ultrasonic gray-scale recorder
LEWIS-12782 B78-10016 02

High-resolution gray-scale recorder
LEWIS-12783 B78-10017 02

Ultrasonic evaluation of high-voltage circuit boards
LEWIS-12781 B78-10087 06

Ultrasonic extensometer measures bolt preload
M-FS-19337 B78-10271 07

Noncontacting electrokinetography system
MSC-18162 B78-10533 05

ULTRASONIC WAVE TRANSDUCERS

Low-cost ultrasonic lamb-wave transducer
MSC-16333 B78-10072 06

Damage-detection system for LNG carriers
LANGLEY-11463 B78-10250 06

A solid-state phase-insensitive ultrasonic transducer
LANGLEY-12304 B78-10385 06

ULTRAVIOLET ABSORPTION

Measurement of total organic concentration in water
MSC-16497 B78-10048 04

ULTRAVIOLET RADIATION

Vacuum-ultraviolet laser uses superfluid helium
NPO-13993 B78-10323 03

Diffraction x-ray focusing
GSFC-12357 B78-10487 03

UMBILICAL CONNECTORS

Automatic circuit interrupter
MSC-16697 B78-10300 01

UNDERWATER ENGINEERING

Fabrication of sea-floor models
NPO-13554 B78-10295 09

UNIONS (CONNECTORS)

Compact pressure-line coupling
MSC-16893 B78-10099 07

Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07

URANIUM

Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07

UREAS

Positively charged membrane for urea dialysis
NPO-14101 B78-10241 05

URINALYSIS

Chemical measurement of urine volume
MSC-16585 B78-10238 05

V

V/STOL AIRCRAFT

Potential flows in propulsion system inlets
LEWIS-13010 B78-10553 06

VACUUM APPARATUS

Rapid leak detection with liquid crystals
MSC-13804 B78-10084 06
Verifying the fit of mating contoured surfaces
LANGLEY-11731 B78-10290 08

VACUUM CHAMBERS

Housing protects laser in vacuum
GSFC-12241 B78-10028 03
Internal grid for release of brazing retorts
MSC-19472 B78-10114 08
Vacuum control for brazing stainless steel
MSC-19457 B78-10115 08
Vacuum leadthrough for hydrogen maser
NPO-14148 B78-10422 07

VACUUM SYSTEMS

Rapid leak detection with liquid crystals
MSC-13804 B78-10084 06

VACUUM TESTS

Rapid leak detection with liquid crystals
MSC-13804 B78-10084 06
Low partial discharge vacuum feedthrough
GSFC-12347 B78-10559 07

VALVES

Magnetostrictive valve
NPO-14235 B78-10104 07
Noncontacting valve-position indicator
MSC-16048 B78-10412 07
Stable hydraulic pressure regulator
LEWIS-13058 B78-10417 07
Latching solenoid for cryogenic valves
MSC-18106 B78-10418 07
Low-leakage low-temperature valve
MSC-18087 B78-10420 07
Automatic bypass valve
LANGLEY-12063 B78-10558 07
Reducing stickiness of elastomer valve seals
LANGLEY-11778 B78-10565 07

VAPOR DEPOSITION

High-temperature waterproofing for tiles
MSC-16773 B78-10135 08
Chemical-vapor deposition of silicon from silane
NPO-14403 B78-10502 03

VARIABILITY

Hydraulic dynamic analysis
MSC-16795 B78-10095 06

VECTORS (MATHEMATICS)

Algorithms for linear-systems control
LANGLEY-12313 B78-10443 09

VEHICLES

Coupler for moving vehicles
GSFC-12322 B78-10407 07

VELOCITY DISTRIBUTION

WAKE and WASH
LANGLEY-12262 B78-10093 06

VELOCITY ERRORS

Improved servo for a michaelson interferometer
NPO-14093 B78-10488 03

VELOCITY MEASUREMENT

In vivo blood-flow mapping
NPO-14133 B78-10244 05
Meter for very slow flows
MSC-18112 B78-10267 07
'Pseudobackscatter' laser velocimeter
ARC-10970 B78-10318 03
Shock-swallowing air sensor
FRC-10107 B78-10537 06
Measuring projectile speed
LANGLEY-12387 B78-10538 06
Miniature velocimeter
LANGLEY-12281 B78-10539 06

VENTILATION

Safe venting for electronic components
MSC-18007 B78-10155 01

VENTING

Safe venting for electronic components
MSC-18007 B78-10155 01

VENTS

High-rise foam-in-place process
MSC-16931 B78-10128 08

VERY HIGH FREQUENCIES

Human arm may act as antenna
ARC-11195 B78-10161 02

VIBRATION DAMPING

Low-frequency vibration isolation
NPO-13915 B78-10275 07

VIBRATION ISOLATORS

Vibration-free thermal link
GSFC-12297 B78-10169 03
Low-frequency vibration isolation
NPO-13915 B78-10275 07

VIBRATION MODE

Calculation of planar-truss modal frequencies
LANGLEY-12137 B78-10382 06

VIDEO COMMUNICATION

Video scrambler/descrambler
MSC-16843 B78-10013 02

VIDEO DATA

Accurate positioning of characters on CRT displays
MSC-16505 B78-10014 02
Simplified data compressor
NPO-14041 B78-10023 02
Data reformatting with less hardware
NPO-13676 B78-10470 02

VIDEO EQUIPMENT

Video method for studying optical fields
M-FS-23103 B78-10036 03
Processing multispectral signals from a discrete-sensor array
NPO-14211 B78-10442 09
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 B78-10505 04

VIDICONS

Video method for studying optical fields
M-FS-23103 B78-10036 03
Infrared-enhanced TV for fire detection
M-FS-19380 B78-10172 03

VINYLIDENE

Fast-drying coating
MSC-16056 B78-10060 04

VISCOELASTICITY

Analysis of linear viscoelastic structures
NPO-13197 B78-10266 06

VISCIOUS DAMPING

Low-frequency vibration isolation
NPO-13915 B78-10275 07

VOIDS

Void-free bends in laminated structures
MSC-16998 B78-10285 08

VOLTAGE CONVERTERS (DC TO DC)

Efficient dc-to-dc converter
FRC-11014 B78-10012 01

VOLTAGE GENERATORS

Three-function signal generator
MSC-16672 B78-10306 01

VOLTAGE REGULATORS

Power-switch dV/dt sensing
MSC-16707 B78-10307 01
Voltage regulator for solar panels
NPO-13895 B78-10478 03

VOLTMETERS

Automated tester for MOS devices
NPO-14088 B78-10001 01

VOLUMETRIC ANALYSIS

Chemical measurement of urine volume
MSC-16585 B78-10238 05

VORTICES

Noise calculation on the basis of vortex flow models
LANGLEY-12271 B78-10078 06
Aircraft trailing vortex hazard alleviators
LANGLEY-12034 B78-10272 07

W

WAFERS

Double-sided solar-cell package
NPO-14199 B78-10033 03

WALKING

Artificial leg with natural gait
M-FS-23225 B78-10239 05

WARNING SYSTEMS

Electrical-ground monitor
MSC-18281 B78-10455 01
System for monitoring lightning strikes
KSC-11018 B78-10475 02

WARPAGE

No-warp potted circuits
MSC-19729 B78-10435 08
Detecting surface deformations photographically
MSC-16156 B78-10547 06

WASHERS (SPACERS)

Antibackoff lock for nuts and bolts
MSC-16472 B78-10409 07

WASHING

Biological sampling and cleaning device
NPO-14010 B78-10245 05

WATER

Data processing for water monitoring system
MSC-16842 B78-10234 05

WATER POLLUTION

Rapid measurement of bacteria in water
GSFC-12158 B78-10232 05
Compact turbidity meter
KSC-11063 B78-10545 06

WATER QUALITY

Measurement of total organic concentration in water
MSC-16497 B78-10048 04
Data processing for water monitoring system
MSC-16842 B78-10234 05
Water sample-collection and distribution system
MSC-16841 B78-10235 05

Automated electrochemical selection of coliforms
 MSC-16777 B78-10236 05
 Chemiluminescence and bioluminescence microbe detection
 MSC-16779 B78-10237 05
 Automated syringe sampler
 LANGLEY-12308 B78-10374 05

WATER RECLAMATION
 Monitoring systems for community water supplies
 MSC-16778 B78-10233 05
 Data processing for water monitoring system
 MSC-16842 B78-10234 05

WATER TEMPERATURE
 Solar hot-water system
 M-FS-25043 B78-10495 03

WATER TREATMENT
 Monitoring systems for community water supplies
 MSC-16778 B78-10233 05

WATER WAVES
 Ocean-wave ray or crest diagrams in shoaling waters
 LANGLEY-12380 B78-10341 03

WATERPROOFING
 High-temperature waterproofing for tiles
 MSC-16773 B78-10135 08

WATERWAVE ENERGY CONVERSION
 Wind/water energy converter
 GSFC-12361 B78-10483 03

WAVEFORMS
 Three-function signal generator
 MSC-16672 B78-10306 01

WAVELENGTHS
 Laser beam color separator
 LANGLEY-11806 B78-10174 03

WEATHER DATA RECORDERS
 Portable data system
 ARC-11136 B78-10316 02

WEATHERING
 Accelerated-weathering test-system for solar cells
 NPO-14061 B78-10185 03

WEAVING
 Special weave for insulating fabrics
 MSC-16380 B78-10288 08

WEBS (SHEETS)
 "Space splitter" for film or tape
 KSC-10894 B78-10138 08

WEIGHT MEASUREMENT
 Chemical measurement of urine volume
 MSC-16585 B78-10238 05

WEIGHT REDUCTION
 Lattice panels with high structural efficiency
 LANGLEY-11898 B78-10426 08

WEIGHTLESSNESS
 Separating biological cells
 M-FS-23883 B78-10521 05

WELDED JOINTS
 Compatibility of Au-Cu-Ni braze alloy with NH₃
 MSC-16864 B78-10219 04
 Welding fixture for thin metal parts
 GSFC-12318 B78-10428 08
 Detecting overpenetration of electron-beam welds
 M-FS-19396 B78-10586 08

WELDING
 Welding fixture for thin metal parts
 GSFC-12318 B78-10428 08
 Reducing weld peaking in aluminum
 M-FS-23973 B78-10433 08

Brazing dissimilar aluminum alloys
 MSC-16340 B78-10587 08

WELDING MACHINES
 Improved electron-beam welder
 M-FS-23772 B78-10143 08

WHEAT
 Predicting crop production from satellite data
 GSFC-12379 B78-10595 09

WICKS
 Improved heat-pipe wick
 NPO-13391 B78-10381 06

WIDE ANGLE LENSES
 Wide angle pinhole camera
 LANGLEY-11905 B78-10173 03

WIDEBAND COMMUNICATION
 Adaptive polarization separation experiments
 LANGLEY-12196 B78-10006 01

WINCHES
 Emergency escape device
 M-FS-23235 B78-10270 07

WIND TUNNEL APPARATUS
 High-sampling-rate pressure transducer has in situ calibration
 LANGLEY-12230 B78-10536 06

WIND TUNNEL CALIBRATION
 Orifice calibration module
 LANGLEY-12269 B78-10393 06

WIND TUNNEL DRIVES
 Automatic bypass valve
 LANGLEY-12063 B78-10558 07

WIND TUNNEL MODELS
 Detection of boundary-layer transitions in wind tunnels
 LANGLEY-12261 B78-10255 06

WIND TUNNEL TESTS
 Infrared scanners for temperature measurement in wind tunnels
 LANGLEY-12171 B78-10077 06
 Subminiature hydraulic actuator
 LANGLEY-11522 B78-10269 07
 Aircraft trailing vortex hazard alleviators
 LANGLEY-12034 B78-10272 07

WIND TUNNELS
 Infrared scanners for temperature measurement in wind tunnels
 LANGLEY-12171 B78-10077 06
 Electronically-scanned pressure measurement system
 LANGLEY-12386 B78-10394 06
 Wing aerodynamics under blowing jets
 LANGLEY-12256 B78-10401 06
 Miniature thermocouple disconnect
 LANGLEY-12013 B78-10535 06

WINDING
 Improved transformer-winding method
 NPO-14243 B78-10282 08

WINDMILLS (WINDPOWERED MACHINES)
 Wind-wheel electric power generator
 M-FS-23515 B78-10268 07

WINDPOWERED GENERATORS
 Wind-wheel electric power generator
 M-FS-23515 B78-10268 07
 Wind/water energy converter
 GSFC-12361 B78-10483 03

WINDSHIELDS
 Window flaw detection by backscatter lighting
 MSC-16605 B78-10089 06

WINGS
 Wing aerodynamics under blowing jets
 LANGLEY-12256 B78-10401 06

WIRE
 Nylon screws make inexpensive coil forms
 MSC-16912 B78-10003 01
 Calibration target for temperature radiometer
 LANGLEY-12239 B78-10083 06
 Wire selector/calculator
 MSC-16632 B78-10120 08
 Modular ground-wire connector
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M-FS-23712 B78-10555 06
- ENGSTROM, E. R.**
resterilizable electrode for
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- ERICKSON, L. L.**
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- ESCUE, W. T.**
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- ESTEY, R. S.**
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- ESTRELLA, C. A.**
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- EDGE, T. M.**
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- EDWARDS, H. B.**
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LANGLEY-12333 B78-10189 03
- EDWARDS, S. F.**
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LANGLEY-12239 B78-10083 06
- EGGEBEEN, J.**
Simple tool removes IC flat packs
MSC-16058 B78-10010 01
- EGGER, R. L.**
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LEWIS-13078 B78-10398 06
- EISENHUT, D. F.**
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LANGLEY-12074 B78-10297 01
- ELBER, W.**
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LANGLEY-12065 B78-10052 04
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NPO-14023 B78-10175 03
- FABER, E. A.**
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- FAIRALL, H.**
Flicking-wire drag tensioner
MSC-16367 B78-10109 07
- FARRELL, C. A., JR.**
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LEWIS-13010 B78-10553 06
- FAZER, R. E.**
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- FEALY, J. M.**
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MSC-16472 B78-10409 07
- FEDORS, R. F.**
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- FELLER, A.**
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- FILLMAN, G. L.**
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MSC-18007 B78-10155 01
- FISCHER, J. R.**
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GSFC-12111 B78-10319 03
- FISH, R. B.**
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LANGLEY-12303 B78-10259 06
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GSFC-11998 B78-10035 03
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LEWIS-12934 B78-10425 08
- FORD, A. G.**
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- FRANKE, J. M.**
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- FRANT, M. S.**
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MSC-18112 B78-10267 07
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NPO-14133 B78-10244 05
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NPO-14247 B78-10531 05
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NPO-13913 B78-10364 05
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GSFC-12078 B78-10376 05
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MSC-16380 B78-10288 08
- FRYER, T. B.**
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ARC-11120 B78-10362 05
- FUCAS, J. C.**
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KSC-11018 B78-10475 02
- FUHRMAN, J. R.**
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MSC-16632 B78-10120 08
- FURUIKE, T.**
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MSC-18013 B78-10445 09
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MSC-18016 B78-10597 09
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MSC-16694 B78-10514 04
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ARC-11195 B78-10161 02
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MSC-18172 B78-10513 04
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MSC-16795 B78-10095 06
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LANGLEY-11586 B78-10246 05
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NPO-14210 B78-10511 04
- GARCIA, E. E.**
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MSC-18014 B78-10265 06
- GARGUS, S.**
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Accelerated purification of colloidal silica sols
MSC-16793 B78-10512 04
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- GELDERLOOS, H. C.**
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- GETLINE, G. L.**
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S-Band complex-weight module for adaptive processing
LANGLEY-12197 B78-10005 01
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ARC-11182 B78-10218 04
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LEWIS-12842 B78-10075 06
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- GOLD, H.**
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LEWIS-13058 B78-10417 07
- GOLDSTEIN, R. M.**
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NPO-14258 B78-10176 03
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LEWIS-13092 B78-10430 08
- GRANDLE, R. E.**
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LANGLEY-12272 B78-10308 01
- GRAY, N. C.**
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KSC-11064 B78-10397 06
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ARC-11031 B78-10367 05
- GRIFFITH, J. S.**
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NPO-13825 B78-10187 03
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Ultra-high-strength boron fibers
LEWIS-12739 B78-10051 04
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LANGLEY-12386 B78-10394 06
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LANGLEY-12230 B78-10536 06
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MSC-16463 B78-10129 08
- GRUNBAUM, B. W.**
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ARC-11121 B78-10247 05

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MSC-16893 B78-10099 07

GUIDRY, L. I.

Analysis of beam columns
MSC-18009 B78-10402 06

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Free-air content in fluid systems
MSC-16703 B78-10251 06

GUNTHER, W. D.

'Pseudobackscatter' laser velocimeter
ARC-10970 B78-10318 03

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Analysis of linear viscoelastic structures
NPO-13197 B78-10266 06

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Quick-and-easy shear-load testing
MSC-16765 B78-10073 06

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Low-chromium stainless steels
LEWIS-12543 B78-10046 04

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Multiple-sample holder for IC testing
NPO-14314 B78-10540 06

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Topping pressure for gas-storage cylinders
MSC-18186 B78-10542 06

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NPO-13867 B78-10509 04

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Hall devices improve electric motor efficiency
M-FS-23828 B78-10303 01

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Fabrication of sea-floor models
NPO-13554 B78-10295 09

HALL, J. R.

Infrared-enhanced TV for fire detection
M-FS-19380 B78-10172 03

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Precision cleaver for 'soft' crystals
GSFC-12291 B78-10348 04

HAMILTON, B. J.

Noncontact optical communication between moving stations
LANGLEY-12283 B78-10377 06

HAMMONS, R. E.

Simplified tooling for spray masking
MSC-16927 B78-10136 08

HAMROCK, B. J.

Self-centering stepped piston
LEWIS-12997 B78-10101 07
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LEWIS-13076 B78-10544 06

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Noise calculation on the basis of vortex flow models
LANGLEY-12271 B78-10078 06

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Wrought nickel-base superalloy
LEWIS-12844 B78-10045 04

HARRIS, W. J.

Measurement of subcoat thickness by characteristic x-rays
MSC-16718 B78-10505 04

HARSTAD, A. J.

Application of solar energy to air-conditioning
M-FS-23913 B78-10215 03

HATCH, A.

Automated control of crystal growth
NPO-14420 B78-10582 08

HAW, D. W.

Modified pipe extension safely releases chain binders
MSC-16937 B78-10103 07

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Insulator for cryogenic joints
M-FS-19361 B78-10419 07

HAYNES, B. W.

Bacillus cereus strain MCN as a debriding agent
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KSC-11053 B78-10134 08

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MSC-19498 B78-10279 07

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MSC-16270 B78-10429 08

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Analysis of linear viscoelastic structures
NPO-13197 B78-10266 06

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Wrench for thin-walled cylinders
LANGLEY-12286 B78-10579 07

HEISMAN, R. M.

Rapid leak detection with liquid crystals
MSC-13804 B78-10084 06

Thermal-leak analyzer for vacuum-jacketed lines
MSC-16802 B78-10085 06

High-temperature brazing of stainless steel
MSC-19459 B78-10112 08

Process fabricates flat panels at high temperatures
MSC-16969 B78-10116 08

Laser wire stripping
MSC-18000 B78-10118 08

A sharp knife for high temperatures
MSC-16932 B78-10278 07

HENDRICKS, R. C.

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LEWIS-12811 B78-10598 09

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M-FS-23139 B78-10141 08

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Simplified phase detector
NPO-13395 B78-10457 01

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Pseudo-continuous-wave acoustic instrument
LANGLEY-12260 B78-10248 06

A solid-state phase-insensitive ultrasonic transducer
LANGLEY-12304 B78-10385 06

HICKMAN, D. M.

Noncontacting electrokinetography system
MSC-18162 B78-10533 05

HILLMAN, J. J.

Thermal compensator for helium refrigerators
GSFC-12168 B78-10082 06

HIPKINS, K. R.

Medical Information Management System
GSFC-12078 B78-10376 05

HIRSCHBERG, J. G.

Compact turbidity meter
KSC-11063 B78-10545 06

HOFFMAN, H. C.

Improved notation controller
GSFC-12273 B78-10383 06

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Standardized gas-temperature probes
LEWIS-13059 B78-10392 06

HOLCOMB, J. M.

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M-FS-23983 B78-10516 04

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Zone-refining encapsulated semiconductors
M-FS-23902 B78-10351 04

HOLLENBAUGH, R. P.

Compression testing of flammable liquids
MSC-16121 B78-10548 06

HOLT, J. W.

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KSC-11053 B78-10134 08

HOLZMAN, R. E.

Processor for the UNIVAC 1100 series
NPO-13469 B78-10600 09

HOPKINS, P. M.

Chopper-stabilized phase detector
MSC-16461 B78-10163 02

HOSIER, R. N.

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LANGLEY-12098 B78-10406 06

HOUGE, J. C.

resterilizable electrode for electrosurgery
HQN-10915 B78-10370 05

HOUSEMAN, J.

Boosting the power of two-stage engines
NPO-14057 B78-10105 07

HOWER, P. L.

High-Speed, high-power, switching transistor
LEWIS-13021 B78-10298 01

HSU, G. C.

Coal desulfurization with iron pentacarbonyl
NPO-14272 B78-10342 04

Chemical-vapor deposition of silicon from silane
NPO-14403 B78-10502 03

Model of silicon production in a fluidized-bed reactor
NPO-14404 B78-10520 04

HUBBARD, W. P.

Automatic acquisition and ranging system
NPO-13982 B78-10312 02

HUDSON, W. R.

Ion-beam texturing of materials
LEWIS-12996 B78-10357 04

ion-beam-textored graphite
LEWIS-12724 B78-10506 04

HUEY, D. C.

Bit-synchronizer lock detector
MSC-16744 B78-10164 02

HUMPHRIES, T. S.

Corrosion inhibitors for solar-heating and cooling
M-FS-25023 B78-10501 03

HUMPHRIES, W. R.

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M-FS-23972 B78-10477 03

HUNTER, W. W., JR.

Miniature velocimeter
LANGLEY-12281 B78-10539 06

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Rapid leak detection with liquid crystals
MSC-13804 B78-10084 06
Thermal-leak analyzer for
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MSC-16802 B78-10085 06
Laser wire stripping
MSC-18000 B78-10118 08
A sharp knife for high temperatures
MSC-16932 B78-10278 07
- IGNACZAK, L. R.**
Portable spark-gap arc generator
LEWIS-12886 B78-10008 01
- INGHAM, J. D.**
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NPO-14053 B78-10058 04
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NPO-13899 B78-10346 04
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M-FS-23788 B78-10158 01
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MSC-16744 B78-10164 02
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MSC-16773 B78-10135 08

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LANGLEY-12154 B78-10287 08
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LANGLEY-11423 B78-10293 08
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MSC-19696 B78-10024 02
- JASON, A.**
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M-FS-25033 B78-10507 04
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LEWIS-13123 B78-10399 06
- JAY, C. G.**
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M-FS-23279 B78-10039 04
- JAYROE, R. R., JR.**
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M-FS-23855 B78-10503 03
- JEFFERS, E. L.**
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water
GSFC-12158 B78-10232 05
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MSC-16778 B78-10233 05
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MSC-16777 B78-10236 05
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bioluminescence microbe detection
MSC-16779 B78-10237 05

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LANGLEY-11670 B78-10256 06
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Thermal compensator for helium
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GSFC-12168 B78-10082 06
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GSFC-12297 B78-10169 03
- JEZEK, D. I.**
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samples
MSC-18206 B78-10327 03
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NPO-13913 B78-10364 05
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Gas-path seal material
LEWIS-12623 B78-10347 04
- JOHNSON, W. H.**
'Space slitter' for film or tape
KSC-10894 B78-10138 08
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NPO-13603 B78-10021 02
- JONES, E. W.**
Improved nucleonic coal-thickness
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M-FS-23725 B78-10344 04
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Testing composite sheets at high
temperatures
MSC-16237 B78-10252 06
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Power-switch dV/dt sensing
MSC-16707 B78-10307 01
- JORDAN, J. E.**
Measuring projectile speed
LANGLEY-12387 B78-10538 06
- JOSEPH, G. M.**
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M-FS-23295 B78-10144 08
- JUANARENA, D. B.**
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LANGLEY-12386 B78-10394 06
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M-FS-23919 B78-10390 06
- JUNOD, T. L.**
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LEWIS-13124 B78-10359 04
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NPO-14291 B78-10368 05
- KALVINSKAS, J. J.**
Microbial desulfurization of coal
NPO-14227 B78-10038 04
- KAMDAR, M. H.**
Hydrogen embrittlement of nickel
ARC-10966 B78-10231 04
- KAMINSKY, R.**
Temperature stabilization of microwave
ferrite devices
MSC-16833 B78-10152 01
- KAMMERER, C. C.**
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transducer
MSC-16333 B78-10072 06
- Corrosion detection and evaluation
M-FS-24436 B78-10227 04
- KAN, E. P.**
Postprocessing classification images
MSC-18238 B78-10601 09
- KANE, J. O.**
Metallic thermal seal
MSC-18135 B78-10566 07
- KANTSIOS, A. G.**
Infrared scanners for temperature
measurement in wind tunnels
LANGLEY-12171 B78-10077 06
Infrared scanners detect thermal
gradients in building walls
LANGLEY-12157 B78-10480 03
- KAPUR, V. K.**
Low-cost high purity production
NPO-14198 B78-10050 04
- KARNS, J. R.**
Dual relief-valve system
LANGLEY-12267 B78-10111 07
- KASSEL, P. C., JR.**
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LANGLEY-12387 B78-10538 06
- KASTNER, S. O.**
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GSFC-12357 B78-10487 03
- KATSANIS, T.**
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LEWIS-12966 B78-10094 06
- KAUFMAN, J. W.**
Wind-wheel electric power generator
M-FS-23515 B78-10268 07
- KAUPPI, J. F.**
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indicator
MSC-16155 B78-10070 06
- KAYS, W. M.**
Internal and external 2-d boundary layer
flows
LEWIS-13009 B78-10260 06
- KEIR, A. R.**
Laser wire stripping
MSC-18000 B78-10118 08
- KEISTER, F. Z.**
Shock during PIND test frees particles
M-FS-23829 B78-10389 06
- KELSO, R. M.**
Thermoelectrically-cooled
erature probe
MSC-18192 B78-10484 03
- KENT, W. B.**
Wrought nickel-base superalloy
LEWIS-12844 B78-10045 04
- KIM, K.**
Model of silicon production in a
fluidized-bed reactor
NPO-14404 B78-10520 04
- KISSIAH, A. M., JR.**
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KSC-11009 B78-10373 05
- KIZER, F.**
Curve tracer checks CMOS IC's
GSFC-12209 B78-10007 01
- KLEMM, R. E.**
Custom blending of lamp phosphors
MSC-16692 B78-10056 04
- KLIMA, S. J.**
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circuit boards
LEWIS-12781 B78-10087 06
- KNUDSEN, A. W.**
Nacelle incremental drag
LEWIS-12786 B78-10400 06
- KOEPP, G. A.**
Common-cavity pumped laser
GSFC-12237 B78-10320 03

KOLYER, J. M.

Universal test fixture for solar cells
NPO-14062 B78-10184 03
Accelerated-weathering test-system for
solar cells
NPO-14061 B78-10185 03

KOPP, G. F.

Three-function signal generator
MSC-16672 B78-10306 01

KOURTIDES, D. A.

Heat resistant nontoxic laminate
ARC-11040 B78-10356 04

KRAUSE, L. N.

Thermocouples measure very-hot gas
temperatures
LEWIS-12843 B78-10076 06
Standardized gas-temperature probes
LEWIS-13059 B78-10392 06

KRUPNICK, A. C.

Natural-oxide solar-collector coatings
M-FS-23518 B78-10326 03

KUBACKI, R. M.

Boron trifluoride coatings for plastics
ARC-11057 B78-10043 04
Scratch resistant plastic lenses
ARC-11039 B78-10519 04

KUHLMAN, E. A.

Compact antenna has symmetrical
radiation pattern
ARC-11189 B78-10473 02

KULESZ, J. J.

Predicting damage from exploding
vessels
LEWIS-13042 B78-10258 06

KUZNETZ, L. H.

Automated controller for liquid-cooled
garments
MSC-18055 B78-10365 05

L**LADANY, I.**

Protective coating for laser diodes
LANGLEY-11746 B78-10171 03

LAGER, J. R.

Low-cost graphite/epoxy structural
panels
M-FS-23871 B78-10427 08

LAN, C. E.

Wing aerodynamics under blowing jets
LANGLEY-12256 B78-10401 06

LANGSTON, J. L.

Simple digital pulse-programming circuit
NPO-13747 B78-10299 01

LARUE, H. C.

Tool simplifies weld preparation of
aluminum
MSC-16992 B78-10123 08

LATTA, W. R.

Dual relief-valve system
LANGLEY-12267 B78-10111 07

LAWSON, A. G.

Brazed boron-silicon carbide/aluminum
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LANGLEY-12244 B78-10221 04

LAWSON, D. D.

Fire-and smoke-retardant polyesters and
elastomers
NPO-14053 B78-10058 04
Long-lasting solid-polymer electrolytic
hygrometer
NPO-13948 B78-10086 06
Coal mining with a liquid solvent
NPO-14028 B78-10345 04

LAYLAND, J. W.

Automatic acquisition and ranging
system
NPO-13982 B78-10312 02

LEAL, J. R.

Ultrafine PBI fibers and yarns
ARC-11221 B78-10504 04

LECROY, S. R.

Ocean-wave ray or crest diagrams in
shoaling waters
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LEE, J.

Telecommunications network
optimization
NPO-14486 B78-10476 02

LEE, R. W.

Retainer for laboratory animals
LANGLEY-12353 B78-10371 05

LEECH, R. A.

Arc detector uses fiber optics
NPO-13377 B78-10449 01

LEONARD, W. D.

Verifying the fit of mating contoured
surfaces
LANGLEY-11731 B78-10290 08

LEPISTO, J.

Multiplexed battery-bypass control
system
NPO-14414 B78-10474 02

LESCO, D. J.

Test-vehicle cycle programmer
LEWIS-12977 B78-10020 02

LEVINSON, S.

Low-power tuner for lasers
M-FS-23863 B78-10486 03

LEVOE, C. E.

Fabrication of sea-floor models
NPO-13554 B78-10295 09

LEVY, M. E.

Testing integrated circuits by
photoexcitation
M-FS-23943 B78-10451 01

LEW, D.

Detecting servo failures with software
FRC-11003 B78-10396 06

LEWIS, D. I.

Processor for the UNIVAC 1100 series
NPO-13469 B78-10600 09

LEWIS, G. W.

Improved myocardium transducer
NPO-14107 B78-10372 05

LICARI, J. J.

Sealing microcircuits with adhesives
M-FS-23869 B78-10592 08

LIND, W. P.

Splicing shielded cables
MSC-18297 B78-10453 01

LINDMAYER, J.

Thin silicon-solar cell fabrication
NPO-14047 B78-10325 03

LINTON, A. T.

Monitoring systems for community water
supplies
MSC-16778 B78-10233 05

LIPOMA, P. C.

Data processing for water monitoring
system
MSC-16842 B78-10234 05

LIPOMA, P. C.

Video scrambler/descrambler
MSC-16843 B78-10013 02

LISKAY, G. G.

Match-mold process for foam insulation
MSC-16631 B78-10126 08

Void-free foam insulation

MSC-16805 B78-10127 08

High-rise foam-in-place process

MSC-16931 B78-10128 08

LIU, H.

Acoustic-optical imaging without
immersion
M-FS-23876 B78-10549 06

LOCKARD, M. L.

Automated temperature-cycling
apparatus
LANGLEY-12310 B78-10391 06

LOEWENTHAL, S. H.

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LEWIS-12965 B78-10107 07

LOMBARDT, T.

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techniques
M-FS-23762 B78-10311 01

LONG, J. C.

Plotting shear-flow forces
MSC-18013 B78-10445 09
Plotting max/min data envelopes
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LOSEY, R.

Testing of three hot-air solar collectors
M-FS-23887 B78-10201 03
Indoor and outdoor tests of a liquid solar
collector
M-FS-23886 B78-10207 03
Performance of black-nickel and
black-chrome solar collectors
M-FS-23888 B78-10210 03

LOVIN, J. K.

Orbital heat rate package
M-FS-23980 B78-10554 06

LOWRY, L. R.

Gate-assisted turn-off thyristor
LEWIS-12535 B78-10004 01

LUCAS, W. G.

Extension handle for spray cans
KSC-11083 B78-10576 07

LUCY, M. H.

Quick-connect threaded attachment
joint
LANGLEY-12232 B78-10414 07

LUDWIG, L. P.

Gas-path seal material
LEWIS-12623 B78-10347 04

LUTWACK, R.

Chemical-vapor deposition of silicon from
silane
NPO-14403 B78-10502 03

Model of silicon production in a

fluidized-bed reactor
NPO-14404 B78-10520 04

LYONS, T. D.

Electrical-ground monitor
MSC-18281 B78-10455 01

M**MACCONNELL, J. W.**

Pulse-width-modulated attenuator for
AGC
NPO-14127 B78-10459 01

MACDORAN, P. F.

Real-time monitoring of crustal
deformations
NPO-14124 B78-10034 03
Air-traffic surveillance systems
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MACFARLANE, D. I.

Detecting overpenetration of
electron-beam welds
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MAIRS, R. Y.

Nacelle incremental drag
LEWIS-12786 B78-10400 06

- MALCHOW, H. L.**
Solar-electric geocentric transfer
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- MANATT, S. L.**
Boosting production yield of biomedical peptides
NPO-14142 B78-10240 05
- MANDEL, G.**
Directory of fire research specialists
LEWIS-13123 B78-10399 06
- MANDELKORN, J.**
Improved method of solar-cell assembly
LEWIS-12729 B78-10438 08
- MANTON, N. R.**
Bench-top soldering aid for PC boards
MSC-16274 B78-10121 08
- MANUS, E. A.**
Narrow-bandwidth receiver
GSFC-12142 B78-10463 02
- MARAIA, B. J.**
Coated-felt thermal insulation
MSC-12737 B78-10510 04
- MARCUS, B. D.**
Flat-plate heat pipe
GSFC-11998 B78-10035 03
- MARGOLIS, J. S.**
Improved 'spectrophone'
NPO-14143 B78-10167 03
- MARKE, M. L.**
Fastener for thermal insulation blankets
MSC-18253 B78-10571 07
- MARSH, H. E.**
Predicting structures of cross-linked condensation polymers
NPO-14007 B78-10352 04
- MARTIN, J. W.**
Reducing stickiness of elastomer valve seals
LANGLEY-11778 B78-10565 07
- MARTIN, W. L.**
Automatic acquisition and ranging system
NPO-13982 B78-10312 02
- MARTINI, W. R.**
Stirling-engine design manual
LEWIS-13098 B78-10580 07
- MASERJIAN, J.**
Measuring oxide trapping parameters in MOS structure
NPO-14120 B78-10002 01
- MASSON, R. K.**
Multichannel VCO needs only one reference
MSC-18225 B78-10448 01
- MASTANDREA, J. R.**
Damage-detection system for LNG carriers
LANGLEY-11463 B78-10250 06
- MASTERS, R. M.**
Inexpensive, portable, integrating solar energy meter
LEWIS-12804 B78-10188 03
- MASTIN, C. W.**
Body-fitted coordinates systems transformations
LANGLEY-12307 B78-10147 09
- MATSUMOTO, R. T.**
Improved driver for capacitive loads
LANGLEY-11609 B78-10304 01
- MAULDIN, D. G.**
Microprocessor-based cardiopulmonary monitor
MSC-18235 B78-10369 05
- MAYO, R. F.**
Automatic bypass valve
LANGLEY-12063 B78-10558 07
- MCCLURE, S. R.**
Welding fixture for thin metal parts
GSFC-12318 B78-10428 08
- MCCOLLUM, W. L.**
Marshall system for aerospace simulation
M-FS-22672 B78-10296 09
- MCCREA, F. E.**
Ruby c-axis alignment system
NPO-14252 B78-10379 06
- MCDUGAL, A. R.**
Precision fluid-pressure regulator
NPO-13370 B78-10106 07
Collapsible module extends tenfold in height
NPO-13371 B78-10280 07
- MCGANNON, W. J.**
Intraocular pressure reduction and regulation
LEWIS-12723 B78-10523 05
- MCGOUGAN, W. R.**
Splicing shielded cables
MSC-18297 B78-10453 01
- MCKEE, E. D.**
Compact antenna has symmetrical radiation pattern
ARC-11189 B78-10473 02
- MCKEOWN, D.**
High-vacuum, low-temperature bond for second-surface mirrors
M-FS-23405 B78-10124 08
- MCKNIGHT, L. E.**
Processing high-strength steel alloys
MSC-16172 B78-10441 08
- MCKOWN, R. D.**
Two braze alloys for thin-wall components
M-FS-19206 B78-10117 08
- MCLYMAN, W. T.**
Improved transformer-winding method
NPO-14243 B78-10282 08
Bonding core mating surfaces improves transformer
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Precise matching of diodes
NPO-14293 B78-10452 01
Load balancing multimodule switching power converters
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- MCNALLY, W. D.**
Flow velocities and streamlines
LEWIS-12966 B78-10094 06
- MCRONALD, A. D.**
Improved electron-beam probe for hypersonic flows
NPO-13793 B78-10254 06
- MENDIRATTA, R. G.**
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- MESSICK, W. R.**
Quick-connect threaded attachment joint
LANGLEY-12232 B78-10414 07
- MEYERS, J. F.**
Miniature velocimeter
LANGLEY-12281 B78-10539 06
- MEZRICH, R. S.**
Video method for studying optical fields
M-FS-23103 B78-10036 03
- MEZZACAPPA, M. A.**
Computation of spare parts requirements
MSC-16872 B78-10593 09
- MICKELSEN, R. A.**
High-temperature capacitive pressure transducer
LEWIS-13078 B78-10398 06
- MIKULAS, M. M., JR.**
Lattice panels with high structural efficiency
LANGLEY-11898 B78-10426 08
- MILLER, C. G.**
Coal mining with a liquid solvent
NPO-14028 B78-10345 04
- MILLER, D. C.**
Low-frequency vibration isolation
NPO-13915 B78-10275 07
- MILLER, R. L.**
Voice-output solar energy reporter
LEWIS-12947 B78-10022 02
- MILLET, A. U.**
Gentle support stands for fluid-line mockups
MSC-16479 B78-10291 08
- MILLMAN, J. L.**
Cryostat safety tent
GSFC-12206 B78-10080 06
- MINER, R. V.**
Wrought nickel-base superalloy
LEWIS-12844 B78-10045 04
- MINTON, F. R.**
Window flaw detection by backscatter lighting
MSC-16605 B78-10089 06
- MITCHELL, M. J.**
High-temperature brazing of stainless steel
MSC-19459 B78-10112 08
Form die and glide plates for vacuum brazing
MSC-16549 B78-10113 08
Internal grid for release of brazing retorts
MSC-19472 B78-10114 08
Vacuum control for brazing stainless steel
MSC-19457 B78-10115 08
Process fabricates flat panels at high temperatures
MSC-16969 B78-10116 08
- MITCHELL, P. D.**
Brazed boron-silicon carbide/aluminum structural panels
LANGLEY-12244 B78-10221 04
- MOACANIN, J.**
Dip-molded t-shaped cannula
NPO-14073 B78-10062 05
- MONFORD, L.**
Data processing for water monitoring system
MSC-16842 B78-10234 05
- MONTANO, J. W.**
Mechanical properties of 18-2 Mn stainless steel
M-FS-23843 B78-10229 04
Nitronic 60: a new alloy
M-FS-23844 B78-10230 04
- MOORE, D. M.**
Lightweight conical antenna reflector
NPO-13552 B78-10472 02
- MOORHEAD, P. E.**
Calibration method for an ultrasonic gray-scale recorder
LEWIS-12782 B78-10016 02
High-resolution gray-scale recorder
LEWIS-12783 B78-10017 02
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Multichannel VCO needs only one reference
MSC-18225 B78-10448 01

MORRIS, G. A., JR.

Wideband digital spectrum analyzer
NPO-14394 B78-10468 02

MORRIS, W. D.

Ocean-wave ray or crest diagrams in
shoaling waters
LANGLEY-12380 B78-10341 03

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Fire-and smoke-retardant polyesters and
elastomers
NPO-14053 B78-10058 04

MSU, G. C.

Low-temperature refining of coal
NPO-14210 B78-10511 04

MUELLER, R. L.

Automated solar-cell-array assembly
machine
NPO-13652 B78-10186 03

MUELLER, W. A.

Positively charged membrane for urea
dialysis
NPO-14101 B78-10241 05

MUNFORD, J. A.

Automated inspection of wire-frame
assemblies
GSFC-12321 B78-10546 06

MURPHY, C. R.

Eliminating gold migration in
microcircuits
MSC-18213 B78-10462 01

N**NAGANO, S.**

Synchronous transfer circuits for
redundant systems
NPO-14162 B78-10157 01

Automatic load sharing in inverter
modules
NPO-14056 B78-10302 01

Overload protection system
NPO-13872 B78-10460 01

NALEPKA, R. F.

Predicting crop production from satellite
data
GSFC-12379 B78-10595 09

NARASIMHAN, K. Y.

Pulse-echo probe of rock permeability
near oil wells
NPO-14192 B78-10222 04

NARAYANASWAMI, R.

Resizing algorithm for loaded structures
LANGLEY-12064 B78-10594 09

NASH, J. M.

Application of solar energy to
air-conditioning
M-FS-23913 B78-10215 03

NEAD, M. W.

A parameter-estimation subroutine
package
NPO-14263 B78-10447 09

NEARY, J. K.

Quick-and-easy shear-load testing
MSC-16765 B78-10073 06

NEASE, A. W.

Hydraulic dynamic analysis
MSC-16795 B78-10095 06

NEFF, M. A.

High-gradient continuous-casting
furnace
LEWIS-12934 B78-10425 08

NELSON, D. J.

Hydraulic dynamic analysis
MSC-16795 B78-10095 06

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High-temperature capacitive pressure
transducer
LEWIS-13078 B78-10398 06

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High-temperature capacitive pressure
transducer
LEWIS-13078 B78-10398 06

NEWTON, J. W.

Measuring radio-signal power
accurately
NPO-13373 B78-10464 02

NICHOLS, R. L.

Glass solar collector - materials
assessment
M-FS-23926 B78-10212 03

NORBURY, D. A.

Miniature Ku-Band down converter
MSC-18313 B78-10450 01

NORRIS, D. A.

Vacuum leadthrough for hydrogen
maser
NPO-14148 B78-10422 07

NORWOOD, L. B.

Contouring pile-brush seals
MSC-16231 B78-10588 08

NUGENT, J.

Shock-swallowing air sensor
FRC-10107 B78-10537 06

NYLAND, T. W.

Simple air-piston gas-sampling system
LEWIS-12922 B78-10110 07

O**OBRIEN, D. E., III**

Efficient digital encoding scheme
MSC-18267 B78-10467 02

OCHELTREE, S. L.

Miniature velocimeter
LANGLEY-12281 B78-10539 06

OFARRELL, K.

Circuit-lead trimming template
MSC-16589 B78-10439 08

OHU, C. K.

High-Speed, high-power, switching
transistor
LEWIS-13021 B78-10298 01

OKAMOTO, G.

Quick locking/unlocking retainer
MSC-18048 B78-10408 07

OLLENDORF, S.

Thermal-control canister
GSFC-12253 B78-10079 06

OLOHAM, G. A.

Predicting damage from exploding
vessels
LEWIS-13042 B78-10258 06

OLSSON, D. L.

Coaxial isolator has versatile interface
MSC-16908 B78-10009 01

ORR, D. H.

Simulator for training
remote-manipulator operators
MSC-14921 B78-10415 07

OSTROFF, A. J.

Approach and landing simulation
LANGLEY-12060 B78-10091 06

OTTH, D. H.

Low-frequency vibration isolation
NPO-13915 B78-10275 07

OWEN, R. B.

Measuring surface displacements
optically
M-FS-23861 B78-10321 03

OWENS, G.

Easily installed insulation for
steamfittings
MSC-18277 B78-10589 08

OWENS, L. J.

Ocean thermal plant
KSC-11034 B78-10482 03

P**PACKARD, C. A.**

Multipurpose system simulator
GSFC-12333 B78-10444 09

PACKER, P. N.

Holding fixture for variable-contour
parts
MSC-16270 B78-10429 08

PADILLA, D.

Low-cost graphite/epoxy structural
panels
M-FS-23871 B78-10427 08

PAGE, D. J.

Gate-assisted turn-off thyristor
LEWIS-12535 B78-10004 01

PARK, J. J.

New adhesive withstands temperature
extremes
GSFC-12345 B78-10042 04

PARKER, J. A.

Heat resistant nontoxic laminate
ARC-11040 B78-10356 04

PARKER, L. W.

Power loss for high-voltage solar-cell
arrays
LEWIS-12865 B78-10340 03

PARR, A.

Absorptive coating for aluminum solar
panels
M-FS-25033 B78-10507 04

PARR, V. B.

Predicting damage from exploding
vessels
LEWIS-13042 B78-10258 06

PARTHASARATHY, S. P.

Pulse-echo probe of rock permeability
near oil wells
NPO-14192 B78-10222 04

PATEL, B. C.

Installing fiber insulation in tight spaces
MSC-16934 B78-10289 08

PAULIN, R. E.

Spares-optimized model
MSC-18015 B78-10446 09

PAULKOVICH, J.

Wind/water energy converter
GSFC-12361 B78-10483 03

PAYNE, B. J.

Testing composite sheets at high
temperatures
MSC-16237 B78-10252 06

PECHMAN, A.

Accelerated purification of colloidal silica
sols
MSC-16793 B78-10512 04

PECK, S. R.

Low partial discharge vacuum
feedthrough
GSFC-12347 B78-10559 07

PELCHAT, G. M.

Adaptive polarization separation
experiments
LANGLEY-12196 B78-10006 01

PERKINS, K. L.

Sealing microcircuits with adhesives
M-FS-23869 B78-10592 08

- PERLMAN, M.**
Detecting and correcting bit errors on magnetic tape
NPO-13842 B78-10294 09
- PERRY, J. C.**
Determining the response of an FM receiver
MSC-16751 B78-10465 02
- PERSON, J. K.**
Automated solar-cell-array assembly machine
NPO-13652 B78-10186 03
- PHILLIPS, B. R.**
Electrolysis cell stimulation
LEWIS-12740 B78-10179 03
- PHILLIPS, E. C., JR.**
Improved heat-pipe wick
NPO-13391 B78-10381 06
- PICCIOLO, G. L.**
Rapid measurement of bacteria in water
GSFC-12158 B78-10232 05
Chemiluminescence and bioluminescence microbe detection
MSC-16779 B78-10237 05
- PILKEY, W. D.**
Performance optimizing
LANGLEY-11930 B78-10096 06
- PINCKNEY, S. Z.**
Static-pressure probe for small geometries
LANGLEY-11552 B78-10395 06
- POEL, G. D.**
Monitoring systems for community water supplies
MSC-16778 B78-10233 05
- POLLOCK, G. E.**
Porous bead packings for gas chromatography
ARC-11222 B78-10518 04
- POOLE, L. R.**
Ocean-wave ray or crest diagrams in shoaling waters
LANGLEY-12380 B78-10341 03
- POORMAN, R.**
Reducing weld peaking in aluminum
M-FS-23973 B78-10433 08
- POSEY, D. L.**
Orifice calibration module
LANGLEY-12269 B78-10393 06
- POUZAR, J. E.**
Easily installed insulation for steamfittings
MSC-18277 B78-10589 08
- POWELL, H.**
Response of graphite/epoxy composites to moisture
MSC-16899 B78-10228 04
- POWER, J. L.**
Electroplating and stripping copper on molybdenum and niobium
LEWIS-12151 B78-10055 04
- PRATURI, A. K.**
Chemical-vapor deposition of silicon from silane
NPO-14403 B78-10502 03
Model of silicon production in a fluidized-bed reactor
NPO-14404 B78-10520 04
- PURGOLD, G. C.**
Automated syringe sampler
LANGLEY-12308 B78-10374 05
- PUSCH, R. M.**
Special weave for insulating fabrics
MSC-16380 B78-10288 08
- Q**
- QUAM, R.**
Detecting servo failures with software
FRC-11003 B78-10396 06
- QUINN, K. L.**
Miniature thermocouple disconnect
LANGLEY-12013 B78-10535 06
- QUINN, R. A.**
Measurement of subcoat thickness by characteristic x-rays
MSC-16718 B78-10505 04
- R**
- RADICS, C. C.**
Process for growing thin polished silicon sheets
NPO-14172 B78-10434 08
- RAMAKRISHNAN, R.**
Predicting rotor rotation noise
LANGLEY-12098 B78-10406 06
- RANDALL, D.**
Predicting rotor rotation noise
LANGLEY-12098 B78-10406 06
- RASSWEILER, G. G.**
Adaptive polarization separation experiments
LANGLEY-12196 B78-10006 01
- RATHZ, T. J.**
Interactive data-processing system for metallurgy
M-FS-23774 B78-10217 04
- RAY, A. J., JR.**
Z-axis control loop for cathode-ray tubes
NPO-13775 B78-10305 01
- REED, I. S.**
Representation of multivalued logic functions
NPO-13760 B78-10596 09
- REED, M. W.**
Film adhesive enhances neutron radiographic images
MSC-18061 B78-10081 06
Inspection of adhesive-bonded radiators
MSC-18062 B78-10125 08
Selection standard for FEP films for solar energy
MSC-16999 B78-10190 03
Breather cloth for vacuum curing
MSC-18063 B78-10440 08
- REINHARDT, V.**
Femtosecond time-domain phase comparator
GSFC-12228 B78-10162 02
Hydrogen-maser frequency standard
GSFC-12334 B78-10490 03
- RE MBAUM, A.**
Fluorescent microspheres
NPO-13946 B78-10068 05
Antistatic coating for acrylics
NPO-13867 B78-10509 04
- RENNER, R. E.**
Fabrication of sea-floor models
NPO-13554 B78-10295 09
- RENNIE, P. A.**
Automated chromosome analysis
NPO-13913 B78-10364 05
- RHEIN, R. A.**
Low-temperature elastomer production and curing
NPO-13899 B78-10346 04
- RHIM, W.**
Pulsed NMR spectroscopy
NPO-14023 B78-10175 03
- RHODES, M. D.**
Lattice panels with high structural efficiency
LANGLEY-11898 B78-10426 08
- RICCITIELLO, S. R.**
Fire-retardant covering for small containers
ARC-11104 B78-10354 04
Improved imide polymerization catalyst
ARC-11107 B78-10517 04
- RICE, D. T.**
Predicting crop production from satellite data
GSFC-12379 B78-10595 09
- RICE, R. F.**
Simplified data compressor
NPO-14041 B78-10023 02
- RICE, S. W.**
Void-free bends in laminated structures
MSC-16998 B78-10285 08
- RICE, W. J.**
Fast differential analog-to-digital conversion
LEWIS-12909 B78-10149 01
Real-time instrument averages 100 data sets
LEWIS-13093 B78-10534 06
- RICHARDS, R. R.**
NO₂ measurement by chemiluminescence
LANGLEY-11378 B78-10386 06
- RICHMOND, R. G.**
Thermoelectrically-cooled erature probe
MSC-18192 B78-10484 03
- RICKER, R. E.**
Predicting damage from exploding vessels
LEWIS-13042 B78-10258 06
- RICKINSON, B. A.**
High-gradient continuous-casting furnace
LEWIS-12934 B78-10425 08
- RILEY, T. J.**
Ultrasonic evaluation of high-voltage circuit boards
LEWIS-12781 B78-10087 06
Control of dielectric film deposition
LEWIS-13092 B78-10430 08
- RINARD, G. A.**
Hand-held vital-signals monitor
MSC-18232 B78-10524 05
Hybrid temperature-monitoring circuit
MSC-18231 B78-10525 05
Hybrid ECG signal conditioner
MSC-18230 B78-10526 05
Hybrid respiration-signal conditioner
MSC-18226 B78-10527 05
Hybrid heart/breath-rate processor
MSC-18227 B78-10528 05
Hybrid LCD driver
MSC-18229 B78-10529 05
Hybrid clock generator
MSC-18228 B78-10530 05
- ROBERTS, M. L.**
Natural-oxide solar-collector coatings
M-FS-23518 B78-10326 03
- ROBINSON, W. W.**
Microcircuit-cleaning machine
MSC-16060 B78-10292 08
No-warp potted circuits
MSC-19729 B78-10435 08

- ROBSON, J. R.**
Detecting surface deformations
photographically
MSC-16156 B78-10547 06
- ROGOWSKI, R. S.**
NO₂ measurement by
chemiluminescence
LANGLEY-11378 B78-10386 06
- ROSATINO, S. A.**
Wideband EMG telemetry system
ARC-11209 B78-10375 05
- ROSE, S. D.**
Improved nucleonic coal-thickness
monitor
M-FS-23725 B78-10344 04
- ROSENGREN, L.**
Low-background trace-gas detector
NPO-13683 B78-10168 03
- ROSENTHAL, C.**
Nylon screws make inexpensive coil
forms
MSC-16912 B78-10003 01
- ROSS, D. S.**
Mass spectrometer calibration standard
NPO-14097 B78-10249 06
- ROTTA, J. W., JR.**
Riveting-force gage
NPO-13477 B78-10432 08
- ROYSTER, D. M.**
Braze boron-silicon carbide/aluminum
structural panels
LANGLEY-12244 B78-10221 04
- RUBIN, L.**
Digital correlator with fewer IC's
MSC-16743 B78-10458 01
- RUDMANN, A. A.**
Coupler for moving vehicles
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B78-10471 02	NPO-13884	B78-10548 06	MSC-16121		
B78-10472 02	NPO-13552	B78-10549 06	M-FS-23876		
B78-10473 02	ARC-11189	B78-10550 06	MSC-16750		
B78-10474 02	NPO-14414	B78-10551 06	MSC-18214		
B78-10475 02	KSC-11018	B78-10552 06	MSC-19645		
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