NASA Technical Memorandum 4192

Microgravity Science and Applications Bibliography

1989 Revision

MAY 1990
CONTENTS

Foreword................................................................................................................................................................ v

Microgravity Science and Applications Program....................................................................................................1

A. U.S. Program..........................................................................................................................................................3
  Electronic Materials..............................................................................................................................................5
  Metals, Alloys and Composites..............................................................................................................................8
  Fluids, Interfaces, and Transport ............................................................................................................................17
  Biotechnology...................................................................................................................................................25
  Glasses and Ceramics........................................................................................................................................30
  Combustion Science........................................................................................................................................31
  Physics and Chemistry Experiments (PACE).........................................................................................................33
  Experimental Technology, Facilities and Instrumentation..................................................................................35

B. European Program...............................................................................................................................................37
  Electronic Materials..............................................................................................................................................39
  Metals, Alloys and Composites..............................................................................................................................40
  Fluids, Interfaces, and Transport............................................................................................................................42
  Glasses and Ceramics........................................................................................................................................49
  Experimental Technology, Facilities and Instrumentation..................................................................................50

C. Soviet Program....................................................................................................................................................51
  Electronic Materials..............................................................................................................................................53
  Metals, Alloys, and Composites............................................................................................................................54
  Fluids, Interfaces, and Transport............................................................................................................................55
  General Studies and Surveys.................................................................................................................................56

D. Japanese Program................................................................................................................................................57
  Electronic Materials..............................................................................................................................................59
  Fluids, Interfaces, and Transport............................................................................................................................60
  Experimental Technology, Facilities and Instrumentation..................................................................................61

GENERAL STUDIES AND SURVEYS.....................................................................................................................63

PATENTS.................................................................................................................................................................67
FOREWORD

This edition of the Microgravity Science and Applications (MSA) Bibliography is a comprehensive compilation of government reports, contractor reports, conference and symposia proceedings, and journal articles dealing with flight experiments utilizing a low-gravity environment to elucidate and control various processes, and with ground-based activities that provide supporting research. It encompasses literature published but not cited in the 1988 Revision, literature published during 1989, and literature either submitted for publication or in press.

All papers are on file and copies can be made available to scientists in the field on request to the bibliographer.

Any omissions that might have occurred are sincerely regretted. Investigators are encouraged to submit to the bibliographer, information on any work that was inadvertently omitted, or any new work, for inclusion in next year’s edition of the Bibliography. All correspondence concerning corrections, additions, or deletions to the Microgravity Science and Applications Bibliography should be directed to: Ms. Elizabeth Pentecost, USRA, Suite 303, 600 Maryland Ave., SW, Washington, DC 20024.

The Microgravity Science and Applications Division wishes to thank the Universities Space Research Association (USRA) and in particular Ms. Elizabeth Pentecost, for her efforts in the compilation and publication of this report.
MICROGRAVITY SCIENCE AND APPLICATIONS PROGRAM
A. U.S. PROGRAM
Electronic Materials


Wiedemeier, H. and Palosz, W., "Mass Flux and Crystal Composition in the Hg_{0.8}Cd_{0.2}Te-HgI_2 Vapor Transport System," J. Cryst. Growth, 1989 (in press).


Metals, Alloys, and Composites


Fluids, Interfaces, and Transport


Davis, R. H., "Near-Contact Hydrodynamics of Two Viscous Drops." in Proceedings of Third International Colloquium on Drops and Bubbles, in press.


Biotechnology


Glasses and Ceramics


Combustion Science


Experimental Technology, Facilities
and Instrumentation


Electronic Materials


Metals, Alloys, and Composites


Fluids, Interfaces, and Transport


Glasses and Ceramics


Experimental Technology, Facilities and Instrumentation


C. SOVIET PROGRAM
Electronic Materials


Fluids, Interfaces, and Transport


General Studies and Surveys


D. JAPANESE PROGRAM


Experimental Technology, Facilities and Instrumentation


This edition of the Microgravity Science and Applications (MSA) Bibliography is a compilation of government reports, contractor reports, conference proceedings, and journal articles dealing with flight experiments utilizing a low-gravity environment to elucidate and control various processes, or with ground based activities that provide supported research. It encompasses literature published but not cited in the 1988 Revision and that literature which has been published in the past year.

Subdivisions of the Bibliography include: Electronic Materials; Metals, Alloys, and Composites; Fluids, Interfaces, and Transport; Glasses and Ceramics; Biotechnology; Combustion Science; Experimental Technology, Facilities, and Instrumentation. Also included are publications from the European, Soviet, and Japanese programs.