



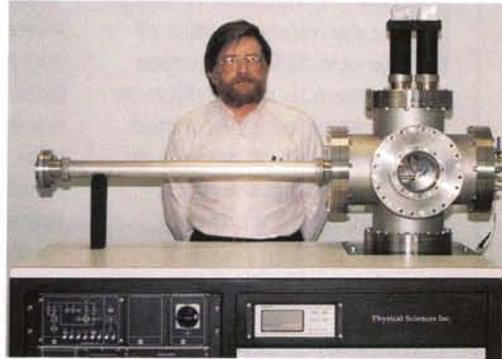
Material Testing Device

At right is a FAST™ system for testing the effects of the space environment on spacecraft and space systems materials. Shown in the photo is Robert H. Krech of Physical Sciences Inc. (PSI), Andover, Massachusetts, co-inventor of the system with PSI president George E. Caledonia.

The FAST (Fast Atom Sample Tester) device simulates in a vacuum chamber how some materials react to contact with atomic oxygen and degrade under long term exposure. The system was developed for NASA as a means of performing accelerated erosion testing of spacecraft materials in a simulated low Earth orbit environment.

Developed under a Small Business Innovation Research (SBIR) contract with Jet Propulsion Laboratory, FAST has become a source of commercial business for PSI. The system is being sold commercially for use in aging certification of materials intended for orbital operation. Investigations are under way for application to etching in submicron printed circuitry and thin film coating.

A second SBIR contract with



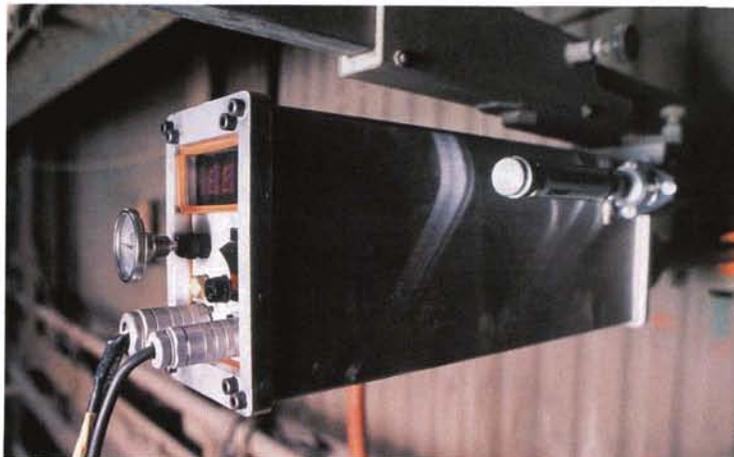
JPL yielded another commercial spinoff product, the Optical Temperature Monitor (OTM) introduced in 1992. The OTM (*below*) is a multi-wavelength pyrometer designed for precise measurement of high temperatures (between 700 and 2500 degrees Centigrade) on materials that have poorly known emissive properties or emissive properties that change with time or temperature. This instrument was developed originally for application to materials manufacture in space but, with additional funding from PSI and the National Science Foundation, the measurement techniques that evolved from the NASA-sponsored research were extended to development of a commercial instrument for measuring and controlling flue

gas temperatures in utility and industrial boilers — thus offering potential for increasing the thermal efficiency and availability of energy producing facilities worldwide.

With modification, the OTM instrument could

find further application in waste destruction and in energy intensive manufacturing operations such as steel, glass, cement, petrochemical, pulp and paper processing. The broad promise of the OTM prompted PSI to create a new company — PSI Environmental Instruments Corporation — for manufacture and marketing of the system.

PSI also offers an Aerospace Measurement Service to support research, test and advanced development projects conducted by aerospace industry firms. This service also involves NASA technology transfer, since much of the testing capability was developed in the course of two NASA SBIR contacts, one with Lewis Research Center and one with Marshall Space Flight Center. ●



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