

ION BEAM SYSTEMS

Single and Dual Beam Systems for:

- Dry etching of semiconductors.
- Ion-sputter deposition.
- Micromachining of dielectrics.
- Surface modification.



200 Series

A versatile range of systems incorporating one or two horizontal ion beams with a wide choice of diameters; Four-position water-cooled sputter target; Rotating water-cooled specimen holder; Beam current to over 500mA; energies to 2000eV; Comprehensive range of instrumentation and accessories.

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Takeshi Nagata. He devoted the next 10 years of his career to the study of rock and mineral magnetism at the Geophysical Institute of the University of Tokyo.

Although his high-pressure research has been principally devoted to geophysical problems, Akimoto has also made important contributions to the solid-state physics of semiconductors and their thermal and electrical transport properties.

in brief

The Smithsonian Institution has presented the **Henry Medal** to **George B. Field**, former director of the Smithsonian Astrophysical Observatory and since 1982 senior scientist there. The Institution noted that Field's "broad vision of astronomy and astrophysics has guided the Smithsonian Astrophysical Observatory and the Harvard College Observatory for a decade, creating the intellectual and cooperative climate for a surge of astronomical advances."

The Solar Energy Research Institute has named **Alvin Czanderna** to the newly created position of Research Fellow.

Czanderna's research is on methods of surface analysis.

John D. Dow has joined the faculty at the University of Notre Dame as Freeman Professor of Physics. Previously at the University of Illinois in Urbana-Champaign, Dow plans to continue his research on materials for microelectronics.

Columbia University has presented the Charles Frederick Chandler Medal to **Rudolph A. Marcus** (Caltech) for his research in theoretical chemical kinetics.

The new director of the Haystack radio observatory, which MIT operates for a consortium of universities and laboratories, is **Joseph E. Salah**. He will also be a lecturer in the department of Earth, Atmospheric and Planetary Sciences at MIT.

The physics department at California State Polytechnic University at Pomona has appointed **Harvey S. Leff** as professor and department chairman; he comes to the department from the Institute of Energy Analysis at Oak Ridge. Other new members of the physics department are **Mary E. Mogge**, **George W. Rainey** and **Gerald Lee Swafford**.

obituaries

George O. Abell

George O. Abell, professor of astronomy at the University of California, Los Angeles, died on 7 October at the age of 56 in the prime of his career.

Except for military service in Japan and sabbatical leaves in Germany and Scotland, Abell resided in the Los Angeles area his entire life. His undergraduate and graduate work was at the California Institute of Technology, and he was a member of the UCLA faculty from 1956 and chairman of the department of astronomy 1968-1975.

During his years as a graduate student, Abell worked as a principal observer for the *National Geographic Society-Palomar Observatory Sky Survey*, the fundamental two-color photographic reference source for stars and nonstellar objects over the sky observable from Palomar. It was during this work that he conceived and carried to completion his prodigious doctoral dissertation on clusters of galaxies. Every astronomer knows that "A2616," for example, means a cluster in the Abell catalog, which comprises a complete, homogeneous list of rich clusters of galaxies. At the time of his death,

Abell was working with Harold G. Corwin on a catalog of southern clusters of galaxies based on the southern hemisphere sky survey, as well as on a revision of the original catalog.

Abell early became convinced that clustering to second-order—but not in a continuing hierarchy—is a basic feature of the largest-scale distribution of

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