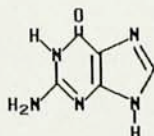


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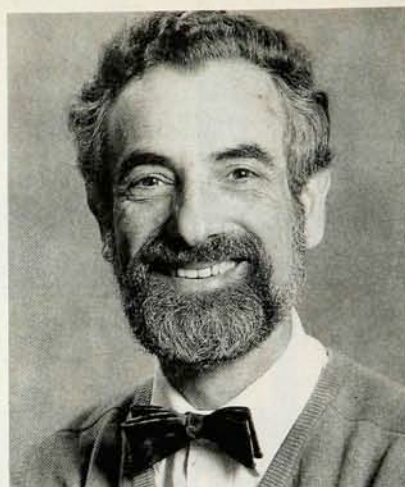
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In 1967 he became a research fellow at Caltech and the Mount Wilson and Palomar Observatories. He went to the University of Texas in 1969 as a faculty associate, and advanced to associate professor in 1970 and full professor in 1974. Lambert has held the Isabel McCutcheon Harte Centennial Chair in Astronomy since 1987.

## LIEB RECEIVES BIRKHOFF AWARD

The American Mathematical Society and the Society for Industrial and Applied Mathematics in January presented the 1988 George David Birkhoff Prize to Elliott Lieb (Princeton University). The prize is awarded every five years for outstanding contributions to "applied mathematics in the highest and broadest sense."

Lieb was cited for his "profound analysis of problems arising in mathematical physics. . . [His] influence on mathematical physics . . . has reached so far because it has remained so deep." In work on nonlinear differential equations and on the classical inequalities of analysis he has focused on a wide variety of topics, including the application of the Schrödinger equation to slowly decaying Coulomb potentials, the theory of liquid crystals, harmonic maps, the Thomas-Fermi problem and the Ising model. In accepting the award, Lieb noted that "good mathematical



Elliott Lieb

physics can aspire to be both good mathematics and good physics, and both fields can benefit from the interaction."

Lieb received his BSc from MIT in 1953 and his PhD in mathematical physics from the University of Birmingham in 1956. From 1960 to 1963 he was a staff physicist at IBM (Yorktown Heights, New York). He was an associate professor of physics at Yeshiva University (1963-66), a professor of physics at Northeastern University (1966-68) and a professor of mathematics at MIT (1968-75). Lieb has been a professor of mathematics and physics at Princeton since 1975.

## IN BRIEF

**Frank Galeener**, formerly at Xerox (Palo Alto, California), has become a professor of physics at Colorado State University. **R. Mark Bradley** and **Richard Eykholt** have joined the physics department there as assistant professors.

**A. D. Callihan**, an administrative judge with the US Nuclear Regulatory Commission, received the 1987 Meritorious Service Award of the American National Standards Institute for "exceptional leadership at all levels of voluntary standardization in the nuclear field."

**Michael Skrutskie** and **Stephen Schneider** have joined the Five College Astronomy Program as assistant professors in the physics and astronomy department at the University of Massachusetts, Amherst.

**Don L. Anderson**, who has directed Caltech's Seismological Laboratory since 1967, has been awarded the Gold Medal of the Royal Astronomical Society of Great Britain for his seismological studies of the structure and physical parameters of the Earth's deep interior.

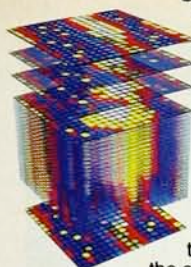
## OBITUARIES

### John A. Thornton

John A. Thornton died on 10 November 1987 at his home in Champaign, Illinois. A first-rate scientist, he was well known internationally in areas ranging from plasma physics to magnetron sputtering to thin film physics.

In addition, he was a highly visible and extremely active member of a variety of scientific organizations, including the American Vacuum Society (which he served as president in 1982) and The American Physical Society.

Thornton was born 3 January 1933

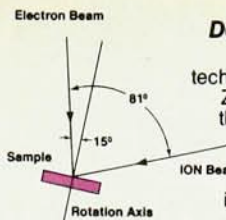


### **SIMS "Checkerboard" Technique Increases Throughput**

The new Atomika Ion Microprobe 6500 provides spatially resolved depth profiling and immediate profile enhancement. A unique Matrix Gate "checkerboard"

technique divides 50% of the sputtered area into 16x16 subgates. Each subgate can then be treated as an individual depth profile after the analysis, providing spatially resolved depth profiling without having to process statistically insignificant data.

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### **Sample Rotation Improves Depth Resolution**

A new patented technique by Dr. Anton Zalar clearly shows that sample rotation during ion sputtering considerably improves the depth resolution of AES composition-depth profiles. This "Zalar rotation" technique enables the ion beam to effectively impinge on the sample over a wide range of incident angles. This unique process is now available as an option on the PHI 4300 Scanning Auger Microprobe.

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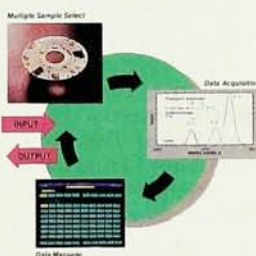
### **X-Ray Monochromator For Optimum Spectral Quality**

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### **AUTOCOM Software For Unattended Analysis**

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### **Surface Analysis Components Catalog**

Available for the first time, a 218-page catalog of Perkin-Elmer Physical Electronics surface analysis components. This new catalog is designed to help the user select the best surface analysis, molecular beam epitaxy and vacuum components to suit individual research applications.



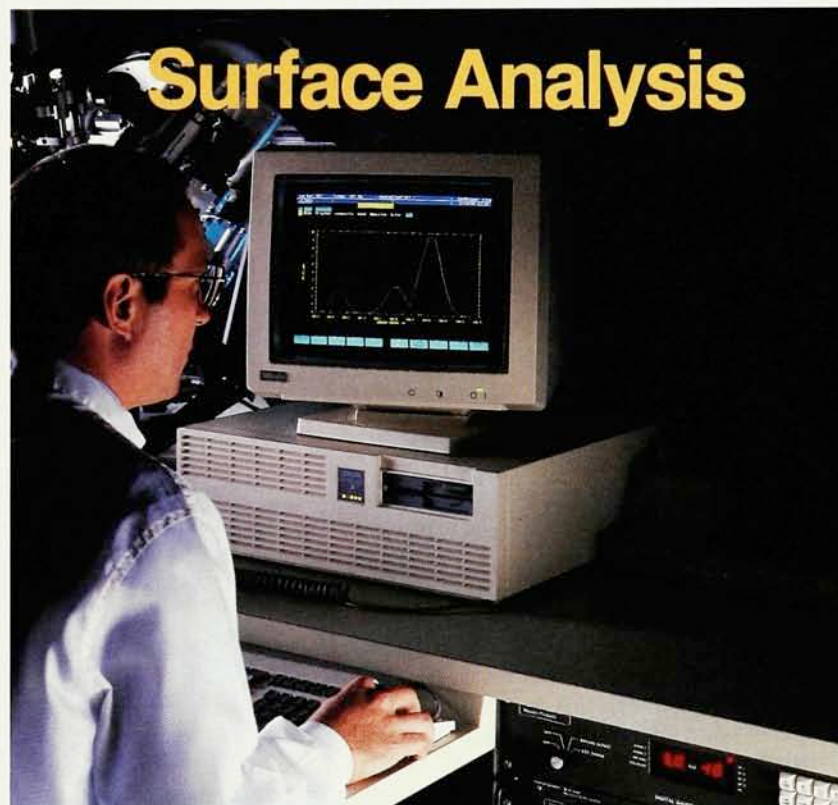
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### **Vacuum Products Catalog**

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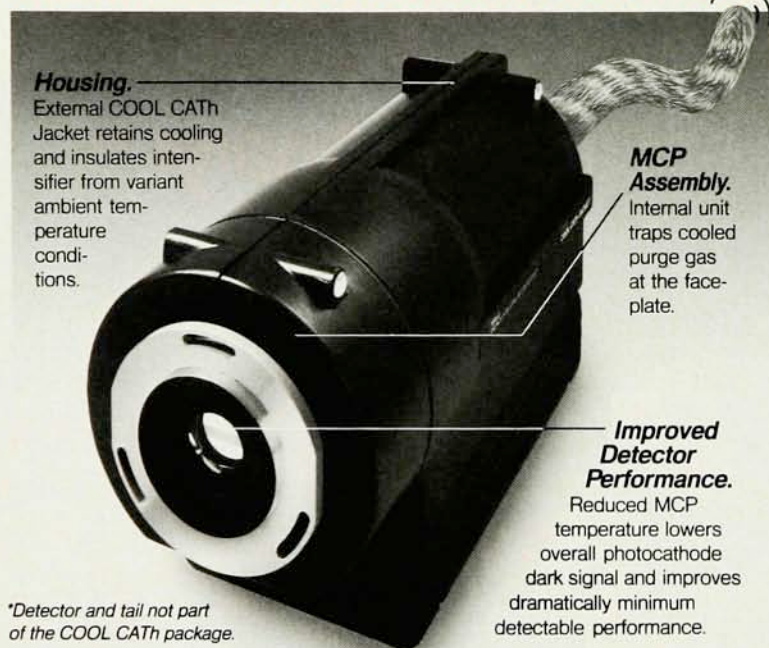
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John A. Thornton

in Olympia, Washington. He obtained BS and MS degrees in mechanical engineering from the University of Washington and was awarded a PhD in plasma physics (1963) from Northwestern University. A few years later Thornton, David Masson and Alan Penfold founded Telic Corporation in Santa Monica, California. There they conducted fundamental physical studies concerning the operation and design of magnetron sputtering devices. Descendants of these devices are now ubiquitous in industrial thin film processing, with applications ranging from microelectronics to hard coatings to optical and magnetic information storage. Thornton was well known for his work on the effects of low-energy ion irradiation on the microstructure of sputter-deposited thin films and for developing the "Thornton microstructure diagram." He and David Hoffman (Ford Motor Company Scientific Research Laboratories) were among the first to investigate the role of fast backscattered neutral atoms in the development of compressional in-plane stress in films deposited by low-pressure magnetron sources.

Thornton joined the metallurgy department at the University of Illinois in 1983. During his four years here he brought important changes. For example, he was instrumental in establishing the new materials science department, and he organized and headed the department's electronic materials division. At the same time, he developed research programs in plasma-surface interactions and photovoltaic devices. He also keenly felt the social responsibility inherent in being a scientist and actively participated at the national level in making decisions concerning the course of scientific research in this country. He served on several national advisory



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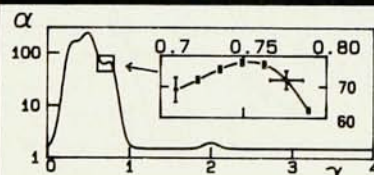
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ry councils for physics and engineering and he was on the editorial boards of *CRC Critical Reviews of Solid State and Materials Sciences*, *Thin Solid Films* and *Surface Engineering*.

John was a very serious man who was single-minded about his work. He put in long hours not because he needed to but because he wanted to. John enjoyed physics. He reveled in it. He had the ability to immediately see the central physics of a problem; he was also an excellent and patient teacher who always had time, even on the busiest of days, to discuss science as well as personal problems with students.

Thornton had a special affection for the American Vacuum Society, to which he belonged for almost 15 years. He served the society in a variety of capacities, including national program committee member for several years, chairman of the national symposium (1980), member of the board of directors (1981-83) and president (1982). He represented AVS as a deputy executive councilor in the IUVSTA from 1986 until his death, and he was a member of the AVS board of trustees. Thornton was also a member of the governing board of the American Institute of Physics. In all of these positions, he served with honor and integrity while vigorously pursuing the educational and scientific goals for which the society was founded.

As great a scientist and teacher as John was, he was equally impressive as a humanist. He had exceptional interpersonal sensitivity and was known for his ability to solve seemingly intractable "people-related" problems. He will be sorely missed by his friends and colleagues. He has, however, left us a better world for his having been here.

JOSEPH GREENE  
University of Illinois  
Urbana, Illinois

## Taber de Forest

After a short illness, Taber de Forest died unexpectedly on 30 July 1987 at his home in Castricum, the Netherlands. He was 47 years old.

Born in Evanston, Illinois, he first attended Yale and went on to study theoretical physics at Stanford University. Working under Dirk Walecka, he received his PhD in physics in 1966 with a dissertation on quasi-elastic electron-nucleus scattering. In the following years he stayed at MIT and Orsay as a research associate. In 1970 he then joined IKO, the Netherlands Institute for Nuclear

Physics in Amsterdam (now NIKHEF-K), where he started the theory group.

Throughout all the years of his career, de Forest's scientific work focused on the theory of electron scattering from nuclei. One of his first publications, a 1966 review article with Walecka in *Advances in Nuclear Physics*, is the classic reference in the field. In subsequent work he addressed meson exchange currents and the Coulomb sum rule. He studied in detail off-shell effects in nucleon knockout reactions. His work contributed greatly to the use of electrons as a precise probe for nuclei. In particular his work on nucleon knockout served as a guideline for the planning and interpretation of many experiments. More recently he had studied the electromagnetic current of nucleons inside a nucleus in relativistic theories and examined consequences of the quark substructure of bound nucleons. He suggested the key measurement to make in looking for modifications of the electromagnetic properties of bound nucleons, which stimulated a whole series of further experiments in Amsterdam and at other electron accelerators.

In all his work de Forest showed a deep and intuitive understanding of physics. His strength was the ability to express and test his ideas in terms of realistic, but clear and manageable, models. He was always eager to discuss physics and exchange ideas with his colleagues, both theorists and experimentalists.

With his passing, we have lost a good friend and a creative scientist who made numerous significant contributions to nuclear physics. His friends and colleagues all over the world will not forget him.

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## Ira M. Freeman

Ira M. Freeman, professor emeritus of physics at Rutgers University, died in Florida in February 1987. He was 81.

His undergraduate and graduate degrees were from the University of Chicago, and he pursued his postdoctoral studies in astrophysics and spectroscopy at the Johann Wolfgang von Goethe Universität in Frankfurt am Main. He then held appointments with the National Advisory Committee on Aeronautics in Washington,