

AVS MEETS IN BOSTON

The American Vacuum Society will hold its 36th National Vacuum Symposium from 23 to 27 October at the Hynes Convention Center and the Sheraton Hotel in Boston. The program committee, with representatives from all seven divisions of AVS, has put together 85 technical sessions, comprising 85 invited and 700 contributed papers. There will be an array of AVS short courses, an equipment exhibit organized by AIP, and a job placement center where interviews will be arranged.

People planning to attend can register in advance by contacting the AVS office in New York, or register on-site at the convention center during the following hours: Sunday, 22 October, 4 pm–9 pm; Monday and Tuesday, 7 am–5 pm; Wednesday and Thursday, 7:30 am–5 pm; and Friday, 7:30 am–2 pm.

Praveen Chaudhari (IBM Thomas J. Watson Research Center), a member of the National Commission on Superconductivity, will deliver the plenary lecture on Monday, in which he will summarize the current scientific understanding of high- T_c superconductors and discuss related policy issues. Also on Monday, a panel of vacuum scientists will share anecdotes from the past and ideas about the future of vacuum technology. Tuesday's schedule will feature a tutorial on scanning tunneling microscopy, given by Joseph Demuth (IBM Thomas J. Watson Research Center). On Wednesday, Alan Guth (MIT) will deliver a lecture on "The Big Bang, the False Vacuum, and Cosmic Inflation." On Wednesday evening, James Burke, a prominent commentator on science and technology who is well known for his public television series "Connections," "The Real Thing" and "The Day the Universe Changed," will explore the thesis that information is the fundamental force that drives all life in his lecture "Good-by Descartes: Information and Change." On Thursday, Richard Solomon (MIT) will give an update on the high-definition television project and discuss issues such as the importance of high-definition systems and broadband networks and the prospects for increasing US com-

petitiveness in HDTV.

Topical conferences

Four conferences organized separately from the AVS symposium but held concurrently with it will focus on specific areas of research. The Third Annual Topical Conference on High Temperature Superconductivity, featuring Chaudhari's plenary lecture, will take place on Monday. As in previous years, the conference will focus on thin films: Invited papers will cover the modeling and properties of films, film growth and device fabrication, and applications of superconducting films.

Two topical conferences will explore two different aspects of microtechnology. The first of these, entitled Nanometer Scale Properties of Surfaces and Interfaces, is being cosponsored by the Office of Naval Research and four AVS divisions—surface science, applied surface science, electronic materials and processing, and thin film. It will be held from Monday through Thursday. The invited speakers will discuss nanometer probes; adsorption on gallium arsenide, silicon and metal surfaces; nucleation and growth of nanoscale structures; nanoscale mechanics and tribology; clusters, and multilayer films. The second topical conference pertaining to microtechnology, sponsored by the thin film division of AVS, will focus on surface microengineering. Invited papers at that conference are divided into the categories of vacuum microelectronics, micromechanical structures, microfabricated probes, microengineered materials and sensors, and surface microengineered structures. The surface microengineering conference will be held Monday and Tuesday.

The Third Topical Conference on Quantitative Surface Analysis will be held on the Friday and Saturday preceding the main symposium, at the Hawthorne Hotel in Salem, Massachusetts, about 15 miles from downtown Boston. Invited papers will be given at four sessions: Electron Transport in Auger Electron Spectroscopy and Data Reduction in AES and X-Ray Photoelectron Spectroscopy; Reference Data for Surface Analysis;

Surface Analysis at High Spatial Resolution and Image Analysis; and Ion-Solid Interactions and Sputtered Neutral Mass Spectrometry.

Novel topics

The divisions of AVS, which organize all technical sessions that are not in one of the topical conferences, have added to the program some topics of active research that have not been covered extensively at previous AVS symposia. The applied surface science division has organized three sessions pertaining to organic, biological and biocompatible surfaces: two on polymer surfaces and interfaces and one on organic, macromolecular and biological surfaces. The electronic materials and processing division solicited papers on passive materials and is organizing a special session on "Microelectronic Challenges and Integrated Materials Processing." Several sessions run by the plasma science and technology division will treat new techniques in the plasma processing of materials, including developments in etching, sputtering and deposition. The surface science division will have an evening session entitled "Late-Breaking Discoveries," and the vacuum metallurgy division is organizing the first session ever at the symposium on the chemistry and physics of composite interfaces.

Awards

AVS will honor outstanding work in the field at the awards assembly, to be held on Tuesday at 7:30 pm in the Republic Room of the Sheraton Hotel.

The Medard W. Welch award will go to Robert Gomer (University of Chicago) for "pioneering contributions to surface science including definitive studies on the theory and application of field emission, chemisorption and desorption phenomena."

Gomer received a BA in from Pomona College in 1944 and a PhD in chemistry from the University of Rochester in 1949. Shortly after receiving his doctorate, Gomer became an instructor in the Institute for the Study of Metals (now the James Franck Institute) at the University of Chicago. He was director the Franck

Institute from 1977 to 1983, and is currently the William Eisendrath Distinguished Service Professor in the University of Chicago chemistry department and the Franck Institute.

Eric Kay (IBM Almaden Research Center) will receive the John A. Thornton Memorial Award, and will deliver the honorary award lecture, "Non-Bulk-like Properties by Design," on Tuesday afternoon at the session entitled Process Property Relationships I. The award citation notes Kay's "pioneering contributions to the study of film growth phenomena in sputtering and plasma polymerization, including study of microstructure relationship to film properties."

Kay received his BS from the University of California, Berkeley, in 1953 and his PhD in inorganic physical chemistry from the University of Washington in 1958. Since receiving his graduate degree Kay has been associated with the IBM Research Center in San Jose, California (now called the IBM Almaden Research Center). He was head of the surface, thin film and plasma sciences department from 1974 to 1987, and is now leading a project on thin film phenomena.

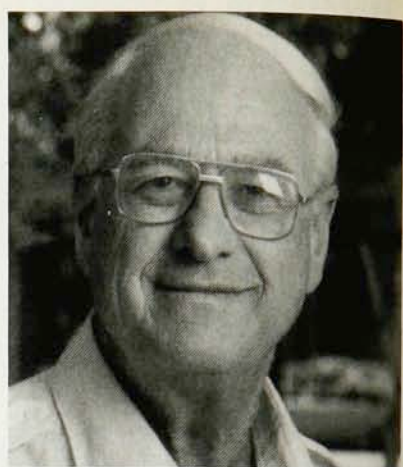
Charles D. Wagner (consultant, formerly of Shell Development Com-



Robert Gomer

pany) and Martin P. Seah (National Physical Laboratory, Teddington) will receive the Albert Nerken Award, which recognizes technological work, for their "contributions to quantification and practical application of surface electron spectroscopies."

Wagner received an AB from Grinnell College in 1939 and a PhD in chemistry from Caltech in 1943. In 1944 he joined Shell Development Company, where he remained until 1977. At Shell he did research in organic, analytical and radio chemistry until 1968, when he began work-



Eric Kay

ing in the new field of electron spectroscopy for chemical analysis. In 1977 Wagner became a private consultant.

Seah received his BSc in 1963 and his PhD in physics in 1969, both from Bristol University. In 1969 he began working with E. D. Hondros at the National Physical Laboratory in Teddington, where he is now head of the surfaces and interfaces group.

Randall M. Feenstra (IBM Thomas J. Watson Research Center) will receive the Peter Mark Memorial Award, which is given for work pub-

Invited papers and sessions

Monday, 23 October

morning

Topical Conference: High- T_c Superconducting Thin Films—Processing, Characterization and Applications. *P. Chaudhari; D. L. Cox; J. C. Fuggle*

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—Nanometer Probes. *H. K. Wickramasinghe; A. Ourmazd; T. T. Tsong; S. Granick*

Topical Conference: Surface Microengineering—Vacuum Microelectronics. *C. A. Spindt; H. F. Gray; R. B. Marcus*

afternoon

Topical Conference: High T_c Superconducting Thin Films—Processing, Characterization, and Applications—Film Growth and Device Fabrication. *R. A. Buhrman; P. M. Mankiewich; P. L. Richards*

Topical Conferences: Nanometer Scale Properties of Surfaces and Interfaces Surface Microengineering—Joint Session—Nanometer Probes. *E. C. Teague; R. S. Robinson; D. F. Evans*

Topical Conference: Surface Microengineering—Micromechanical Structures. *D. L. Kendall*

Vacuum Technology: Panel Discussion on Vacuum Technology—Past, Present, and Future. *P. A. Redhead; C. Alexander; D. B. Fraser; M. H. Hablanian; H. G. Patton; D. J. Santeler*

Topical Conferences: Nanometer Scale Properties of Surfaces and Interfaces Surface Microengineering—Joint Session—Microfabricated Probes. *T. R. Albrecht*

Plasma Science: Plasma Modeling. *M. J. Kushner*

Vacuum Technology: Pumps, Pumping and Related Topics. *J. E. De Rijke*

Surface Science: Adsorption and Reactions on Metals. *J. Cowin; J.-W. He*

Thin Film: Sputtering and Bombardment Effects. *B. Window*

Electronic Materials: Oxidation and Nitridation of Semiconductors. *G. W. Rubloff; E. A. Irene*

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—GaAs and Adsorbates. *J. A. Stroscio; G. D. Waddill*

Topical Conference: Surface Microengineering—Microengineered Materials & Sensors. *D. W. Burns; L.-S. Fan; R. L. Smith*

Vacuum Metallurgy: Composite Interfaces. *C. G. Pantano; D. B. Marshall*

afternoon

Plasma Science: Plasma Diagnostics. *D. N. Ruzic*

Vacuum Technology: Flow Measurement, Calibrated Leaks & Leak Detection. *D. J. Santeler*

Surface Science: Adsorption and Desorption. *R. Gomer*

Electronic Materials/Thin Film: Epitaxy and Chemical Growth Techniques. *K. F. Jensen; D. D. Coon*

Thin Film: Process Property Relationships. *E. Kay*

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—GaAs and Adsorbates. *R. M. Feenstra*

Wednesday, 25 October

morning

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—Nucleation/Growth. *M. G. Lagally*

Vacuum Metallurgy: Diamond and Diamond-Like Carbon Films. *F. Jansen*

Applied Surface Science: Depth Profiling and Standards. *D. S. Simons; L. E. Rehn*



Charles D. Wagner



Martin P. Seah



Randall M. Feenstra

lished, at least in part, in the *Journal of Vacuum Science and Technology* and done by a scientist or engineer under the age of 36. Feenstra is noted for his "original applications of scanning tunneling microscopy to the study of atomic-scale geometric and electronic structure of surfaces."

Feenstra got his bachelor's degree in engineering physics from the University of British Columbia in 1978, and his MSc in 1980 and PhD in 1982 from Caltech, both in applied physics. He joined IBM in 1982, and is now a research staff member there, using

scanning tunneling microscopy to study semiconductor surfaces and interfaces.

The *Journal of Vacuum Science and Technology* Shop Note Award, given by the vacuum technology division, recognizes an article published in the journal during the previous year that presents a solution of an instrumental or experimental problem. The 1989 award is shared by A. P. Jardine, M. Ahmad, R. J. McClelland and J. M. Blakely for their contribution to "A Simple Ultrahigh Vacuum Shape Memory Effect Shutter Mechanism"

(*J. Vac. Sci. Technol. A* **6**, 3017, 1988).

The AVS exhibit, organized by the American Institute of Physics, will be open Tuesday from noon until 7 pm, Wednesday from 11 am to 6 pm, and Thursday from 10 am to 3 pm. Films, surfaces, materials and related equipment will be on display. AIP will also operate a job placement center, where interviews will be arranged between employers and prospective employees. The center will be open Tuesday through Thursday, 8:30 am–12:30 pm and 1:30 pm–5 pm; and Friday, 8:30 am–12 pm. ■

Plasma Science: Reactive Plasma Etching. *D. W. Hess*

Vacuum Technology: 1. Vacuum Applications in Industrial Processing 2. Gaging. *B. I. Grady; P. R. Johansen; T. Norton*

Surface Science: Adsorption and Reactions Metals. *P. J. Feibelman*

Electronic Materials: Epitaxy and Chemical Growth Techniques. *H. F. Schaake; R. D. Feldman*

Thin Film: Process-Property Relationships. *R. W. Hoffman; A. J. Perry*

afternoon

Plasma Science: Plasma Diagnostics. *A. Garscadden*

Vacuum Technology: Residual Gas Analysis and Calibration. *D. Lichtman*

Electronic Materials/Thin Film: Heterojunctions and Superlattices. *P. M. Petroff; F. Koch; E. F. Schubert*

Thin Film: Magnetic, Optical, Ferroelectric and Piezoelectric Films. *M. H. Francombe*

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—Silicon and Adsorbates. *Ph. Avouris*

Vacuum Metallurgy: Ion Assisted Deposition and Surface Modification. *J. R. Conrad*

Thursday, 26 October

morning

Applied Surface Science: Polymer Surfaces and Interfaces. *E. J. Kramer*

Plasma/Thin Film: Electron Cyclotron Resonance (ECR) Plasmas and Applications. *W. M. Holber*

Vacuum Technology/Plasma: Vacuum Technology for Fusion Devices. *W. G. Reddan*

Thin Film: CVD and Activated Vapor Deposition Processes. *R. Madar*

Surface Science: Surface Atomic Structure. *M. B. Webb*

Electronic Materials: Microelectronics Challenges and Integrated Materials Processing. *A. Reisman; T. Ohmi; M. Liehr; G. Lucovsky*

Thin Film: Cluster Ion Beam Deposition. *R. E. Hummel*

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—Mechanics/Tribology. *J. B. Pethica*

afternoon

Applied Surface Science: Organic, Macromolecular, and Biological Surfaces. *G. M. Whitesides; B. D. Ratner*

Plasma/Thin Film: ECR Techniques Applied to Thin Films. *S. Dzioba; R. Burke*

Vacuum Technology: Vacuum Systems for Accelerators and Dedicated Electron Storage Rings. *J. C. Schuchman; H. Jöstlein*

Surface Science/Electronic Materials: Growth and Kinetics. *L. C. Feldman*

Electronic Materials: Beam Processing. *S. W. Pang*

Surface Science: Surface Electronic Structure. *J. G. Fujimoto; E. W. Plummer*

Topical Conference: Nanometer Scale Properties of Surfaces and Interfaces—Metal Adsorbates. *R. J. Behm*

Plasma Science: Plasma-Materials Interactions. *K. L. Wilson*

Friday, 27 October

morning

Applied Surface Science: Polymer Surfaces and Interfaces—Polyimides. *A. R. Rossi*

Plasma Science: ECR and other Novel Discharge Sources. *J. M. Cook*

Vacuum Technology: Hazardous Chemical and Radioactive Gases—Processing, Measurement, and Safety. *H. Y. Kumagai; M. S. Ortman; R. H. Sherman*

Surface Science: Surface Dynamics. *A. W. Kley; K. W. Kolasinski*

Electronic Materials: Metal-Semiconductor Interfaces. *A. Kahn*

Thin Film: Mechanisms of Nucleation, Epitaxy and Growth. *J. F. Schetzina*

Surface Science: Growth and Epitaxy. *S. D. Sarma*

afternoon

Plasma Science: Modulated Plasma Processing. *Y. Horiike; A. Bouchoule; J. T. Verdeyen*

Electronic Materials/Thin Film: Passive Materials, Barriers, and Silicides. *M-A. Nicolet*