

AVS TO MEET IN ATLANTA

The 35th annual AVS symposium will feature sessions on surface science, plasma science, thin films and vacuum technology, as well as prizes.

The American Vacuum Society will hold its annual meeting in Atlanta, Tuesday through Friday, 4-7 October. The meeting is being coordinated with the Fourth International Laser Spectroscopy Conference, which is being sponsored by the Laser Spectroscopy Topical Group of The American Physical Society. The laser meeting will take place Sunday through Thursday, 2-6 October, at Atlanta's Marriott Marquis; sessions for the vacuum meeting will be held at the Atlanta Hilton and the Marriot Marquis. The scientific programs of each are open to registrants of either conference, and several joint sessions are planned on such topics as laser deposition, etching and microanalysis.

Registration for the vacuum meeting will take place at the Hilton on Sunday, 2 October, from 3 pm to 10 pm; on Monday, Tuesday and Wednesday from 7 am to 5 pm; on Thursday from 7:30 am to 5 pm; and on Friday from 7:30 am to 3 pm.

Sessions are planned on a wide variety of topics in vacuum science, including surface science, plasma science, electronic materials, materials processing in vacuum and thin film deposition and growth. In addition, three topical conferences are scheduled: "High- T_c Superconducting Thin Films, Devices and Characterization" (sponsored by all AVS divisions); "Probing the Nanometer-Scale Properties of Surfaces and Interfaces" (sponsored by the AVS divisions of Surface Science and Applied Surface Science and by the Office of Naval Research); and "Selected Area Processing" (sponsored by the AVS Electronic Materials Division and the APS Topical Group on Laser Spectroscopy). A postdeadline discovery session has been scheduled for Thursday. The AVS Vacuum Technology Divi-

sion will sponsor a workshop on contamination in vacuum on Monday. AVS will also begin holding lunchtime tutorials at its meeting; Bruce van Dover (AT&T Bell Laboratories, Murray Hill, New Jersey) will present a tutorial on high- T_c superconductivity on Tuesday at 12:45 pm.

The eighth annual AVS run, a 5-kilometer race, will be held on Wednesday morning in Piedmont Park, which is located two miles from the Hilton.

Awards

The American Vacuum Society will present several awards at a ceremony and reception in the Marriott Marquis on Tuesday evening.

Peter Sigmund (University of Odense, Denmark) will receive the Medard W. Welch Award for his "theoretical contributions to the field of physical sputtering and related phenomena." Since the late 1960s Sigmund's research has focused on the physics of atomic collisions; he developed a theory of sputtering that described sputtering phenomena such as yields and angular distributions of the sputtered particles. He has developed models for the sputtering of multicomponent particles and of chemisorbed gases; he and C. Lehman have also modeled the sputtering pattern of metals from single crystals. In addition, Sigmund has studied the thermal spikes induced in solids when they are bombarded with ions, the theory of linear collision cascade and stopping power theory.

Sigmund received his MSc from the University of Göttingen in 1959 and his Dr in physics from the Technical University of Aachen in 1962. He became a research scientist at Kernforschungsanlage Jülich in 1965, a lecturer at the University of Aarhus in 1969, and a lecturer at the Univer-

sity of Copenhagen in 1971. Since 1978 he has been a professor of physics at the University of Odense.

John R. Arthur Jr (Oregon State University) and Alfred Y. Cho (AT&T Bell Laboratories, Murray Hill, New Jersey) will receive the Gaede-Langmuir Award for their "pioneering research in the invention and development of [molecular-beam epitaxy] and its application to advanced materials and devices." In the late 1960s and early 1970s, Arthur and Cho developed the crystal growth technique called molecular-beam epitaxy. Arthur and his collaborators demonstrated epitaxial growth by molecular-beam methods in 1969; he has since studied the epitaxial process and related fields and applications, including thin-film deposition, surface reaction kinetics, optoelectronic devices and solar cells. Cho demonstrated in the early 1970s that the structure of the surface was crucial to the process. He has made fundamental contributions to the development of the technology, including its application in fabricating superlattices, "band-gap" engineering, microwave devices such as FETs, mixer diodes and IMPATT diodes, photodetectors and lasers.

Arthur received his BS (1954) and his PhD in physical chemistry (1961) from Iowa State University. He then became a member of the technical staff of Bell Labs (Murray Hill). In 1977 he joined the physical electronics division of Perkin-Elmer, and in 1983 he became a professor of electrical engineering at Oregon State.

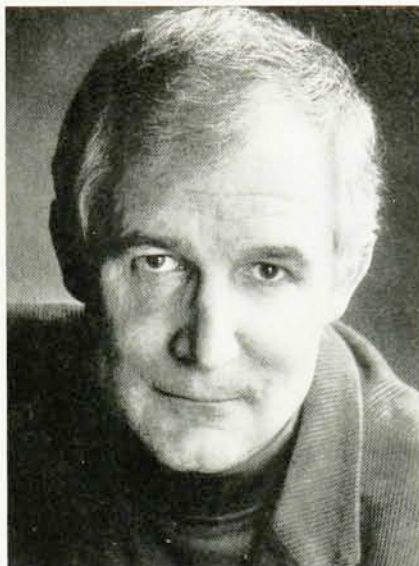
Cho received his MS (1961) and PhD (1968) in electrical engineering from the University of Illinois. He has been a member of the technical staff at Bell Labs since 1968, and he is currently the director of the materials processing laboratory at Bell Labs.

Stanley L. Milora (Oak Ridge National Laboratory) will receive the Albert Nerken Award for his "outstanding achievements in developing and applying unique and creative fueling systems for fusion devices." Since the late 1970s Milora has conducted extensive theoretical and experimental studies on the fueling technique known as hydrogen pellet injection. These studies have included the theory of pellet ablation in a magnetized plasma, as well as the development of the light gas gun pellet injector system, which has been incorporated into the design of many plasma fusion machines in the US and abroad.

Milora received his MS (1968) and PhD (1972) from MIT. He has been at Oak Ridge since 1972, and he is currently a senior member of the research staff and the group leader of the plasma fueling program.

Jerry Tersoff (IBM Thomas J. Watson Research Center, Yorktown Heights, New York) will receive the Peter Mark Memorial Award for his "innovative approaches to the theoretical understanding of the electronic structure, properties and measurement of surfaces and interfaces." He and Donald R. Hamann (Bell Labs, Murray Hill) have developed a microscopic theory of scanning tunneling microscopy. In work on the theory of heterojunction band lineups, Tersoff has made several predictions that were subsequently confirmed experimentally, including a connection between the lineups and the height of the Schottky barriers, and large valence-band discontinuities in several semiconductor systems. In addition, he has worked on the theory of ideal metal-semiconductor interfaces.

Tersoff received his PhD from the University of California at Berkeley in 1982, and he has been a member of



Peter Sigmund



Stanley L. Milora



Alfred Y. Cho



John R. Arthur

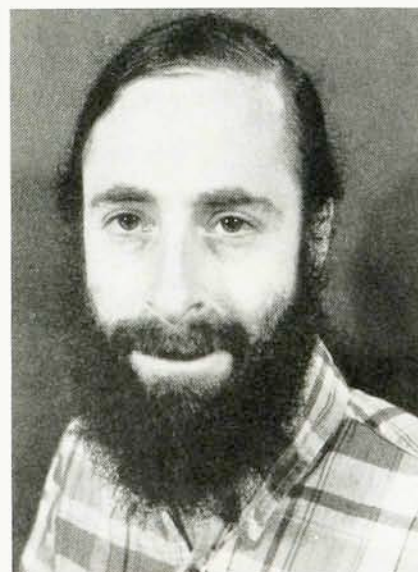
the research staff at IBM since 1984.

The Welch, Gaed-Langmuir and Nerken awards are each worth \$5000; the Mark award is worth \$2500.

G. L. Fowler (Sandia National Laboratories) will receive the *Journal of Vacuum Science and Technology* Shop Note Award for his paper, "Helium Leak Detection Probe," which was published in the May-June 1987 issue of *JVST*. Winners of the society's Student Prizes and the Russell and Sigurd Varian Fellowships will also be announced.

Short courses and exhibit

AVS will offer 46 short courses throughout the meeting, including the following seven new courses: total pressure gauging techniques, principles of semiconductor thin films, physics and technology of semiconductor contacts, fundamentals and



Jerry Tersoff

applications of variable-angle spectroscopic ellipsometry, molecular-beam epitaxy of thin films, plasma-enhanced chemical vapor deposition

and optical diagnostic techniques for plasma processing.

Some 162 companies occupying 278 booths will participate in the exhibit

of vacuum equipment, which is organized annually by the American Institute of Physics.

—MARGARET MARYNOWSKI ■

Invited papers and sessions

Monday, 3 October

morning

Topical conference: Probing the nanometer-scale properties of surfaces and interfaces. A. J. Melmed, C. W. Chu, D. T. Pierce

afternoon

Topical conference: Probing the nanometer-scale properties of surfaces and interfaces. J. N. Israelachvili, U. Landman, D. L. Luedtke

Tuesday, 4 October

morning

Applied surface science: Quantification and data handling. S. Mrazkowski

Electronic materials: Plasma processing and deposition. J. Barely

Plasma science: Aspects and applications of electron cyclotron resonance plasmas. J. Asmussen

Vacuum metallurgy: Stress in deposited films—processing effects and stress measurements. A. J. Perry, D. S. Rickerby, P. A. Steinmann, H. E. Hintermann

Vacuum technology: Vacuum pumps, pumping effects and related topics. M. E. Jalbert

Topical conference: Probing the nanometer-scale properties of surfaces and interfaces. W. J. Kaiser, L. D. Bell, J. M. Cowley

afternoon

Applied surface science: Characterization of interfaces. J. Fine

Electronic materials: Overview of electronic processing. J. Arthur, A. Y. Cho, J. C. C. Fan, P. Siegmund, R. T. Tung

Plasma science: Fueling of plasma devices. S. L. Milora

Surface science: Surface reactions and dynamics. C. T. Rettner, E. K. Schweizer, H. Stein, D. J. Auerbach

Surface science: Electron structure and magnetism. J. Tersoff, W. Gudat

Thin film: Reactive sputtering. S. Berg, H.-O. Blom, T. Larsson, C. Nender

Vacuum metallurgy: Ion-assisted deposition processes and applications. R. P. Netterfield, P. J. Martin, K.-H. Müller, W. G. Sainry, C. G. Pacey, S. W. Filipek

Vacuum technology: Gauges, pressure measurement, mass spectrometers and calibration. H. J. Halama

Topical conference: Probing the nanometer-scale properties of surfaces and interfaces. H.-W. Fink, J. E. Frommer, J. S. Foster

Wednesday, 5 October

morning

Applied surface science: Diffusion and diffusion barriers. P. H. Holloway

Electronic materials: Strained-layer superlattices. J. Bevk, C. Mailhot, D. L. Smith

Plasma science: Diagnostics for plasma processes. J. M. Soures, R. L. McCrory, D. Bradley, S. Craxton, J. Delettrez, R. Epstein, P. Joannimagi, R. Keck, J. Knauer, R. Kremens, S. Letzring, F. J. Marshall, M. C. Richardson, W. Seka, R. Short, S. Skupsky, C. Verdon, B. Yaakobi

Surface science: Surface structure. E. D. Williams, R. J. Phaneuf, N. C. Bartelt, Y. Yang, J. E. Griffith

Surface science: Surface chemistry. C. P. Slichter

Thin film: Thin film characterization. R. O. Pohl

Vacuum metallurgy: Diamond and diamond-like carbon. C. Deshpandey, R. F. Bunshah

Topical conference: Selected area processing. G. W. Rubloff, Y. S. Liu, H. S. Cole, D. J. Ehrlich, M. Rothschild, J. G. Black, W. Ho, T. M. Mayer

afternoon

Applied surface science: Chemical effects. D. E. Romaker

Electronic materials: Selective and enhanced metal chemical vapor deposition. J. R. Creighton, R. Rosenfeld

Plasma science: Plasma modeling. D. B. Graves, R. A. Gottscho

Surface science: Clusters. S. J. Riley

Thin film: Optical thin films. G. I. Stegeman, D. G. Hall, C. T. Seaton

Vacuum metallurgy: Diamond and diamond-like carbon. B. Singh, O. R. Mesker, A. W. Levine, Y. Arie

Vacuum technology: Flow measurement, outgassing and calibrated leaks. J. L. Chamberlin

Thin film: Aspects of thin films. A. Y. Wu

Thursday, 6 October

morning

Applied surface science: Preferential sputtering and depth profiling. D. Swartzfager

Applied surface science and vacuum metallurgy: Tribology and adhesion. G. M. McClelland, C. M. Mare, G. Neubauer, R. Erlandsson, S. Chiang, G. Hadzioannou

Electronic materials: Semiconductor surfaces and interfaces. C. Williams, H. K. Wickramasinghe, M. Sauvage-Simkin, R. Pinchaux, J. Massies, I. K. Robinson

Plasma science: Plasma materials interactions. D. W. Hoffman

Thin film: Nucleation and growth. W. A. Tiller, R. W. Collins

Topical conference: Selected area processing—laser deposition and surface reactions. G. S. Higashi, D. V. Podlesnik, C. F. Yu, M. T. Schmidt, R. M. Osgood

afternoon

Applied surface science: Methods for analyzing insulating materials. D. S. Wang, C. G. Pantano

Electronic materials: MMBE growth. H. Leuth, E. Tokumitsu, M. Konagai, K. Takahashi

Surface science: Phase transformations. J. W. M. Frenken

Thin film: Deposition and property relations. K. L. Lewis, I. T. Muirhead, A. M. Pitt, A. G. Cullis, G. M. Williams, T. J. Wyatt-Davies

Vacuum metallurgy: Deposition processes and coating properties. D. M. Sanders

Vacuum technology: H. Ishimaru, H. Hisamatsu

Topical conference: Selected area processing—laser etching and doping. J. H. Brannon, F. A. Houle, P. G. Carey, K. H. Weiner, T. W. Sigmon

Friday, 7 October

morning

Applied surface science: Lasers and surfaces. P. T. Murray

Electronic materials: Discrete devices, detectors, sensors and solar cells. K. Iga, F. Koyama, S. Kinoshita

Plasma science: Plasma enhanced chemical vapor deposition and processing. D. M. Marox

Surface science: Structure and epitaxy. R. J. Wilson, S. Chiang, V. Hallmark, P. Lippel, C. M. Mare, H. Ohnari, C. Woell, P. A. Bennett, X. Tong, J. R. Butler

Surface science: Surface electronic structure. J. E. Houston

Thin film: Thin film semiconductor contacts. F. M. D'Heurle

Vacuum technology and electronic materials: Contamination control, surface treatment and wear processes. J. F. O'Hanlon

Topical conference: Selected area processing—ion and electron beam processing. K. Gamo, S. Namba, J. Melngailis

afternoon

Applied surface science: Solid-liquid interfaces and failure analysis. S. Thomas

Electronic materials: Metal-semiconductor interfaces. J. M. E. Harper, S. E. Hörnström, O. Thomas, A. Charai, L. Krusin-Elbaum

Plasma science: ICF target technology. J. T. Larsen, T. Norimatsu, Y. Kato, S. Nakai

Surface science: New techniques. R. J. Birgeneau, K. W. Evans-Lutterodt, E. D. Specht, J. W. Chung, J. D. Brock, P. J. Estrup, M. S. Altman, I. K. Robinson, A. A. MacDowell

Surface science: Vibrations at surfaces. J. S. Nelson, E. C. Sowa, M. S. Daw

Thin film: Deposition and property relations. S. F. Meyer

Topical conference: Selected area processing—area-selective and beam-enhanced epitaxy. J.-O. Carlsson, J. G. Eden, Y. Aoyagi, A. Doi, S. Iwai, T. Meguro