



American Vacuum Society meets in Baltimore

Topics range from semiconductor surfaces to national security issues, and include plasma physics, epitaxy, thin films, vacuum equipment and interface analysis.

The 29th National Symposium of the American Vacuum Society will be held 15-19 November in the Baltimore Convention Center, situated on the newly renovated inner harbor historic area. Both the technical sessions and the exhibitors' programs are the largest in the history of the Society. The final program, consisting of 68 invited papers and 360 contributed papers, including 74 posters and 24 new product seminars, represents a 12% increase over last year.

Special emphasis is being placed this year on poster presentations, providing

a unique opportunity for direct technical exchange and interaction between author and audience. This year authors will also give oral poster previews of their work at scheduled times. On Tuesday afternoon the Electronic Materials and Processing Division will present a session on electronic materials and interfaces in the lounge area, with oral previews at 2:00, 2:45, 3:30 and 4:15. On Wednesday afternoon a session on thin-film physics sponsored by the Thin Films Division will be held in the lounge area. Oral previews can be heard at 2:15, 3:00 and 3:45. The

Surface Science Division will hold a session on aspects of surface science on Thursday afternoon in Room 317. Oral previews will be at 2:00, 2:45, 3:30, 4:15 and 5:00.

In addition to the full technical program, the schedule includes a number of committee and division meetings, publications meetings, standards meetings, the annual AVS business meeting and a companions' program of tours. On Tuesday, Wednesday and Thursday there will be an exhibit of equipment in Exhibit Halls C and D. The Society will present its awards at a

INVITED PAPERS

Tuesday/Morning

Vacuum Technology

"Canadarm" and the Space Shuttle. *B. Aikenhead, R. G. Daniell, F. M. Davis*

Thin Films

Thin Film Microelectrode Arrays for an Artificial Ear. *R. L. White, L. A. Roberts, O. Kwon, N. Cotter*

Electronic Materials and Processing

Recent Developments in Silicon Molecular Beam Epitaxy. *J. C. Bean*

Recent Developments in MBE-Grown GaAs/n-AlGaAs Heterostructures and Application to High-Speed Devices. *S. Hiyamizu, T. Mimura*

ASTM E-42/AVS

Interfacial Analysis of Semiconductor Structures. *J. M. Poate*

Surface Science

sexats Studies of the Surface Chemical Bond: Principles and Applications. *J. E. Rowe, P. H. Citrin*

Surface Geometries from Channeling and Blocking. *R. M. Tromp*

Fusion Technology

Measurements of Helium Density in PLT Using Nuclear Diagnostics. *J. D. Strachan*

Laser Fluorescence Measurements of Hydrogen and Metal Densities in the Doublet III Tokamak. *C. H. Muller III, D. R. Eames, K. H. Burrell*

The Lyman Bands of H₂. *J. L. Terry*

Tuesday/Afternoon

Thin Films

Developments in Broad-Beam Ion Source Technology and Applications. *J. M. E. Harper, J. J. Cuomo, H. R. Kaufman*

ASTM E-42/AVS

Simultaneous Electron and X-ray Analysis and Its Application in Corrosion Science. *J. E. Castle*

Surface Science

Chemisorption on Transition-Metal Oxides and Oxide-Supported Noble Metals. *V. E. Heinrich*

Overlayer Defects, Reactions and Ordering Phenomena. *M. G. Lagally, T. M. Lu, K. D. Childs, H. M. Clearfield*

Tuesday/Evening

Fusion Technology

Industrialization of Fusion Power. *P. J. Reardon*

The Role of an Architect/Engineer/Constructor in Industrialization of Fusion Power. *L. F. C. Reichle*

Role of National Laboratory/University Cooperation in Industrialization of Fusion Power. *C. C. Baker*

The Role of an Aerospace Company in Industrializing Fusion Power. *D. F. Huebner*

Wednesday/Morning

Vacuum Technology

Reliability of High Vacuum Measurements. *C. R. Tilford*

Electronic Materials and Processing

The Evolution of Plasma Technology for Microelectronics. *C. J. Mogab*

Plasma Etching of III-V Compound. *V. M. Donnelly, D. E. Ibbotson, D. L. Flamm*

Origin and Control of Anisotropy in Dry Etching. *A. Barker, R. H. Bruce*

Surface Science

Theory of Semiconductor Surface Reconstruction: Si (111) — 2×1, Si (111) — 7×7 and GaAs (110). *K. C. Pandey*

Self-Consistent Electronic Band Structure Calculations: Changes upon Chemisorption. *R. Richter*

Fusion Technology

Vacuum Applications for the Tritium Systems Test Assembly. *J. L. Anderson*

Tritium Storage/Delivery and Associated Cleanup Systems for the TFTR. *B. E. Anderson, J. T. Gill, R. A. Watkins, C. W. Pierce*

Wednesday/Afternoon

Vacuum Technology

Computer Uses in Vacuum Equipment and Processes. *F. M. Kline*

Electronic Materials and Processing

Current Problems in Silicon Oxidation. *J. D. Plummer*

Surface Science

Inverse Photoemission. *D. P. Woodruff, P. D. Johnson, N. V. Smith*

New Insights from Electron Spin Polarization Studies of Surfaces. *D. T. Pierce, R. J. Celotta*

Fusion Technology

Inertial Fusion Experiments with the Nova Laser System and Implications for Targets. *J. F. Holrichter*

Target Requirements for Direct Drive uv Laser Fusion: Irradiation Uniformity and Hydrodynamic Stability. *R. L. McCrory*

Recent Inertial Fusion Target Experiments. *B. H. Ripplin*

The Role of Fuel Capsule Technologies in Inertial Fusion Implosion Diagnostics. *D. T. Attwood*

Advanced Lasers for Inertial Confinement Fusion. *C. A. Fenstermacher*

Thursday/Morning

Vacuum Technology

The Fermilab Tevatron: Vacuum for a Superconducting Storage Ring. *C. L. Bartelson, H. Jostlein, G. M. Lee, P. J. Limon, L. D. Sauer*

Sealing Mechanisms in Bakeable Vacuum Seals. *A. Roth*

Thin Films

Contact Resistance: Al and Al-Si to n⁺ and p⁺ Silicon. *T. J. Faith, R. S. Iven, S. K. Plante, J. J. O'Neill Jr*

Electronic Materials and Processing

Effects of Electronic Correlation on the Properties of Semiconductor Surfaces. *A. Redondo, W. A. Goddard III, T. C. McGill, T. J. Watson Sr*

Atomic Structure of Semiconductor Compound Surfaces and Interfaces. *A. J. Kahn*

Fusion Technology

The Use of Metallic Glasses in Fabrication of ICF Targets. *W. L. Johnson*

Analysis of Hydrogen and Deuterium by Secondary-Ion Mass Spectrometry as Applied to Problems in Fusion Technology. *C. W. Magee*

Tritium Imaging. *M. E. Malinowski*

Surface Science

Surface Processes in Plasma-Etching Environments. *H. F. Winters, T. J. Chuang, J. W. Coburn*

Covalent Interaction Effects in Electron/Photon Stimulated Desorption. *D. E. Ramaker*

Thursday/Afternoon

Vacuum Technology

Vacuum Systems for Microelectronics. *J. F. O'Hanlon*

special luncheon on Wednesday.

Special sessions and seminars

Special evening sessions are being held by the Surface Science, Fusion Technology and Vacuum Technology Divisions. The Surface Science Division will present its annual session for post-deadline discoveries on Thursday evening at 8:00 in Room 317. Morton M. Traum of Bell Laboratories will moderate this session of short talks on important discoveries made after the regular program deadline; the Surface Science Student Award will also be presented at this session.

The Fusion Technology Division is sponsoring a special session entitled "Industrialization of Fusion Power" on Tuesday evening at 7:30 in Room 301. The program will provide insights into the roles played by the government and the private sector in the development of fusion technology. Invited speakers include P. J. Reardon (Princeton University) discussing "Industrialization of Fusion Power"; L. F. C. Reichle (Ebasco Services) speaking on "The Role of an Architect/Engineer/Constructor in Industrialization of Fusion Power"; Charles C. Baker (Argonne National Laboratory) talking about the "Role of

National Laboratory/University Cooperation in Industrialization of Fusion Power"; and D. F. Huebner (Grumman Aerospace Corporation) discussing "The Role of an Aerospace Company in Industrializing Fusion Power."

On Thursday evening at 8:00 the Fusion Technology Division will hold its annual "Blue Sky Session" in Room 307. John Weir (Lawrence Livermore Laboratory) will moderate the discussion on "Microtarget Fabrication: Speculations, Perspectives and Revivals."

On Tuesday and Wednesday evening the Vacuum Technology Division will hold expanded New Products Seminars. These sessions provide vacuum experts, manufacturers and inventors with an opportunity to preview new products, vacuum instrumentation and techniques. Tuesday's session begins at 7:30 in Room 307 and will be moderated by J. F. Peterson (CTI Cryogenics), and on Wednesday beginning at 6:00, L. Morehouse Jr (Stokes Vacuum Equipment) will lead a seminar in Room 307.

This year the AVS has organized a special lecture on "Scientific Exchanges and National Security" to be held Thursday at 1:00 p.m. in Room 317. The lecture will be given by Frank Carlucci, Deputy Secretary of the Department of Defense, and will be followed by a short presentation on the constitutional and legal aspects of scientific exchanges by Mary Cheh, professor at the National Law Center, George Washington University. The Society arranged these special presentations to highlight the problems and



Electronic Materials and Processing

Zone-Melting Recrystallization of Si Films with a Movable-Strip-Heater Oven. *M. W. Geis, H. L. Smith, B. Y. Tsaur, J. C. C. Fan, D. J. Silversmith, R. W. Mountain*

Fusion Technology

Solid Deuterium Centrifuge Pellet Injector. *C. A. Foster*
Fusion Fuel Pellet Injection. *R. S. Hawke*
Negative Ion Sources for Neutral Beam Systems. *K. W. Ehlers*

Friday/Morning

Thin Films

Sputtering of Multicomponent Materials. *G. K. Wehner*

Electronic Materials and Processing

Microanalysis Needs for Device and Package Fabrication. *J. N. Ramsey*
Structural and Electronic Properties of Interfaces. *P. M. Petroff*
Characterization of VLSI and VHSIC Materials. *G. E. McGuire, R. T. Tuenge, D. L. Jones, K. K. Smith, L. B. Church*
High-Resolution Imaging and Microanalysis of Semiconductor Interfaces. *O. L. Krivanek*

Surface Science

Infrared Absorption and Emission Spectra of Thin Films and Monolayers on Reflective Metal Substrates—Quantitative Aspects. *D. L. Allara*

Vibrational and Rotational Excitations of Adsorbed Molecules. *S. Andersson*

Fusion Technology

The Changing MFTF Vacuum Environment. *D. Margolies, L. Valby*
Design of EBT-P Vacuum System. *G. L. Aldon, C. F. Dillow, V. E. Stubblefield*
Design of a DEE Vacuum Vessel for Doublet III. *L. Davis*
The Leak Checking and Testing of the First Yin Yang Magnet for the Mirror Fusion Test Facility (MFTF). *T. A. Kozman, G. H. Lathrop, D. L. Podesta*

Friday/Afternoon

Thin Films

Altered Properties of Films Under Particle Bombardment. *J. J. Cuomo*

Electronic Materials and Processing

Formation of the Schottky Barrier at the Transition Metal/Silicon Interface. *P. S. Ho*
Silicide Formation: Impurities and Lateral Diffusion. *K. Oura, Y. Yabuuchi, F. Shoji, T. Hanawa*

Surface Science

Primary Steps in Catalytic Synthesis of Ammonia. *G. Ertl*
Modification of Surface Reactivity by Adsorbed Sulfur on Nickel (100). *R. J. Madix, S. B. Lee, T. M. Thornburg*



politics that surround this controversial issue.

On Wednesday morning at 10:00 in Room 310, Shirley McCune, director of State Services of the Educational Commission of the States, will be the keynote speaker at a workshop on short-course instructional methodology.

The Society of Physics Students is sponsoring invited lectures, on Wednesday and Thursday at 12:15 in Room 301, to encourage student participation in Society meetings. The AVS extends an invitation to students attending SPS lectures to attend other technical sessions being held on the same day without paying a registration fee. Thursday the SPS will hear Reuben E. Alley (Department of Electrical Engineering, US Naval Academy) discuss physics and art.

Ceremonial sessions

The AVS Awards luncheon will be held on Wednesday in Constellation Ballroom C and D at the Hyatt Hotel. The Gaede-Langmuir Award, given to recognize and encourage outstanding discoveries and inventions, will be presented to Alfred H. Sommer of Thermo Electron Corporation "for inventions and development of photocathodes and secondary emitters." At the Plenary Session, in Room 317 of the Convention Center following the Awards luncheon, Sommer will lecture on the "Elements of Luck in Research—the Story of Photocathodes 1930-1960."

The Peter Mark Memorial Award, presented annually since 1979 to a young scientist or engineer for outstanding theoretical or experimental work, will be given to Charles Magee of RCA Laboratory "for imaginative developments of secondary ion mass spectrometry."

Scholarships for 1982-83 will also be awarded to ten students from US universities who wish to pursue research in fields of interest to the Society. The scholarships carry a stipend of \$1000.

On Thursday evening, as part of a session held by the Surface Science Division in Room 317 at 8:00, the winner of a competition for the best student paper presented during the Symposium will be announced. A cash prize and a certificate will be presented. The winning paper must concern original research that makes a significant contribution to surface science.

Short courses

An extensive educational program complements the technical sessions. All courses will begin at 8:30 a.m. and end at 5:00 p.m., with 90 minutes for lunch. Registration will begin Sunday in Room 312 from 7:00 p.m. to 9:00 p.m. and continue Monday through Friday from 7:00 a.m. to 5:00 p.m.

The course offerings cover a range of interests and lengths, from a five-day course in vacuum technology geared for persons with limited experience in the field, to such specialized offerings as one-day courses on "Tritium handling in vacuum systems" and "Epitaxy of compound semiconductors."

Exhibits and other events

An exhibit of state-of-the-art systems, instruments and components will be held in Exhibit Halls C and D, in the Convention Center. Descriptions of displays by individual companies begin on page 57. Admission is free and the exhibit will be open from noon to 7:00 p.m. Tuesday, from 10:00 a.m. to 5:00 p.m. Wednesday and from 8:00 a.m. to 3:00 p.m. Thursday.

A bulletin board with postings of employment opportunities will be maintained throughout the symposium in Room 315 of the Convention Center.

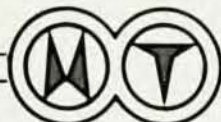
Baltimore is one of the world's most famous seaports and the inner-harbor area has recently undergone a dramatic renovation. This historic region skirting the Chesapeake Bay offers scenic views of the water, sailing vessels and historic homes as well as access to modern boutiques, promenades and outdoor cafés.

The companions' program includes a tour of The Naval Academy in neighboring Annapolis on Tuesday. A visit to Fort McHenry where Francis Scott Key wrote the "Star Spangled Banner," is part of a tour of historic Baltimore on Wednesday. A candlelit dinner highlights Wednesday night's tour of historic Fells Point, a seafarers' town where clipper ships were once built. Visitors to nearby Washington, D.C., on Thursday will see the Capitol and Congress in session, as well as Arlington National Cemetery. —JC

50 MHz PHOTON DISCRIMINATOR



Model 511
\$525.00



- Fast Amp-Disc for Single Photon Counting Applications
- 18 Nanosecond Resolving Time at all Sensitivities
- Unique Gain/Threshold Control provide 30 microvolt to 20 millivolt Threshold Range
- NIM Fast Negative and Slow Positive Outputs provided

Mech-Tronics

NUCLEAR

430A Kay Ave., Addison, IL 60101

**For more information
WRITE OR CALL COLLECT
(312) 543-9304**

Circle number 23 on Reader Service Card