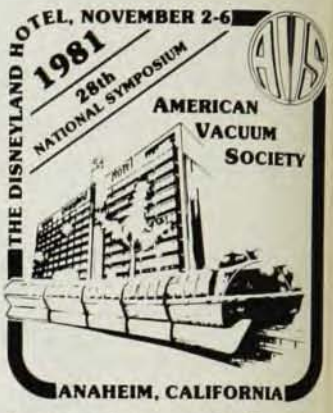
American Vacuum Society meets in Anaheim



Topics include plasma fusion, thin film photovoltaics, interface chemistry, semiconductors, and coatings

The 28th National Symposium of the American Vacuum Society, to be held 2–6 November at the Disneyland Hotel in Anaheim, California, will be the largest ever organized by the Society. The technical program consists of 68 invited and 343 contributed papers; in addition, the Education Committee will provide a variety of one-, two- and five-day courses. One of the reasons for the increased number of papers is the expansion of the new Fusion Technology Division. This year they will mount a full program of technical sessions for the first time as a separate division.

Poster sessions will provide an additional forum for the exchange of information. The Fusion Technology Division's poster session on Tuesday evening will feature four invited papers on the industrialization of fusion power. The Vacuum and Fusion Technology Divisions will hold a joint session Wednesday morning on target fabrication and vacuum techniques and the Thin Films Division will consider the deposition and characterization of thin films. Wednesday evening the Vacuum Technology Division will host a seminar on new products. The Electrical Materials and Processing and Surface Science Divisions will jointly hold a session on Thursday afternoon and that evening the Surface Science Division will discuss important post-deadline discoveries and present the Surface Science Student Award. The Fusion Technology Division will also hold a session Thursday evening to discuss high speed, low cost, target fabrication.

In addition to the full technical program, the schedule also includes a number of committee and division meetings, standards meetings, the annual AVS business meeting and a companions' program of tours. An all-day seminar will be presented by the Association of Vacuum Equipment Manufacturers on Tuesday and at a special luncheon on Wednesday the Society will present its awards.

Seminars and Sessions

In its first program on Tuesday morning the Thin Film Division will highlight thin film photovoltaics with invited talks by A. Rothwarf (Drexel University) on "Polycrystalline Thin Film Solar Cells" and D. E. Carlson (RCA) on "Amorphous Thin Films For Terrestial Solar Cells"; the Fusion Division will hear D. L. Mattox (Sandia) discuss "The Effect of Processing Var-

INVITED PAPERS

TUESDAY/Morning

Thin Films
Polycrystalline Thin Film Solar Cells. A Rothwarf
Amorphous Thin Films for Terrestrial Solar Cells. D. E. Carlson

Surface Science
Chemisorption and Catalysis. R. P. Merrill
Single Crystals as Model Catalysts. D. W. Goodman

Electronic Materials and Processing
Chemical Reactions at the Al-GaAs Interface. G. P. Schwartz

ASTM E-42/AVS
Initial Stages of Metal Oxidation and Passive Oxide Film Growth. W. O'Grady, C. Y. Yang
Properties of Passive Films of Metals. J. Lumsden

Vacuum Technology
Thermal Desorption Measurements for Estimating Bakeout Characteristics and Requirements of Vacuum Devices and Systems. L. Beavis

Fusion Technology
The Effect of Processing Variables on Coating Morphology. D. M. Mattox

TUESDAY/Afternoon

Thin Films
Energy Related Optical Coatings. A. Thelen

Surface Science
Recent Developments in Electron & Photon Stimulated Desorption. D. Menzel
Auger Line Shape Probe of Chemical Bonding, Localized Excited States and Desorption Mechanisms. D. R. Jennison

Electronic Materials and Processing
Molecular Beam Epitaxial Growth and Electrical Transport of Graded Barriers for Non-Linear Current Conduction. A. C. Gossard, W. Brown, C. L. Allyn, W. Wiegmann

ASTM E42/AVS
A Review of Surface Spectroscopies for Semiconductor Characterization. C. R. Helms
Semiconductor-Insulator Interface: Attempts to Correlate Electronic Properties with Physical and Chemical Structure. D. Langer

Vacuum Technology
Technology and Applications of Pumping Fluids. L. Laurenson

Fusion Technology
Neutral Beam Systems. J. H. Fink

WEDNESDAY/Morning

Surface Science
Electron Energy Loss Spectroscopy of Adsorbed Atoms. D. L. Mills
Recent Developments in Electron Energy Loss Spectroscopy. H. Ibach

Electronic Materials and Processing
Epitaxy: Its Role in Compound Semiconductor Device Technology. J. Woodall
Single-Crystal Semiconductor Films on Amorphous Substrates Using the Cleft Process. C. O. Boxler, R. W. McClelland, J. P. Salerno, John C. C. Fan

Vacuum Technology
Measuring and Maintaining Process Gas Purity. S. Wechter, C. Tollin
Safety in Pumping and Handling Hazardous Gases. T. Francis

Fusion Technology
Neutral Particle Diagnostics for Ohmically and Auxiliary Heated Tokamaks. F. Wagner

WEDNESDAY/Afternoon

Surface Science
Possible Role of Electron-Hole Pair Excitation in the Spectroscopy and Dynamics of Absorbed Species. H. I. Metiu
Experimental Studies of Dynamics of Molecule-Surface Interactions. D. J. Auerbach

Electronic Materials and Processing
Laser Photodeposition. D. J. Ehrlich, R. M. Osgood Jr, T. F. Deutsch
Unique Semiconductor Materials & Structures Produced by Laser and Electron Beams. W. L. Brown

Education Training
Vacuum Training by and for Industry. D. Rush

Vacuum/Fusion Technology
A Tritium Compatible High Vacuum Pumping System. D. O. Coffin

iables on Coating Morphology"; R. P. Merrill (Cornell University) will speak on "Chemisorption and Catalysis"; D. W. Goodman (Sandia) will discuss "Single Crystals as Model Catalysts"; and W. O'Grady and C. Y. Yang (Brookhaven) will talk about the "Initial Stages of Metal Oxidation and Passive Oxide Film Growth."

During Tuesday afternoon the first plasma fusion session will feature J. H. Fink (Lawrence Livermore) speaking on "Neutral Beam Systems"; C. R. Helms (Stanford University) will present "A Review of Surface Spectroscopies for Semiconductor Characterization"; A. Thelen (Optical Coatings Lab Inc.) will discuss "Energy Related Optical Coatings"; basic tools for surface studies will be dealt with in D. Menzel's (Technical University of Munich) talk on "Recent Developments in Electron and Photon Stimulated Desorption" and D. R. Jennison's (Sandia) discussion of "Auger Line Shape Probe of Chemical Bonding, Localized Excited States and Desorption Mechanisms"; and various pump devices will be discussed by L. Laurenson (Edwards High Vacuums, England) in "Technology and Applications of Pumping Fluids."

Tuesday evening a thorough discussion on the prognosis for fusion will be part of a special session held by the Fusion Technology Division, and will include invited presentations by A. Mense (House Committee on Science and Technology) on the "Congressional View of Fusion Power Development and Industry's Role," M. Roberts (Department of Energy) on "The Government's Role in the Industrialization of Fusion Power," J. R. Gilleland (General Atomic Company) on "Fusion Engineering Device," and S. O. Dean (Fusion Power Associates) on the "Role of Industry in Fusion Development."

Wednesday morning's session will include joint invited papers by D. L. Mills (University of California, Irvine) on "Electron Energy Loss Spectroscopy of Adsorbed Atoms" and H. Ibach (K. F. A. Julich, West Germany) on "Recent Developments in Electron Energy Loss Spectroscopy"; epitaxial growth will be discussed in "Epitaxy: Its Role in Compound Semiconductor Device Technology" by J. Woodall (IBM T. J. Watson Research Center) and "Single-Crystal Semiconductor Films on Amorphous Substrates Using the Cleft Process" by C. O. Bozler, R. W. McClelland, J. P. Salerno and J. C. C. Fan (Lincoln Laboratory, MIT); the Fusion and Vacuum Technology Division will host a session on target fabrication and vacuum techniques moderated by K. Beig and W. Taylor (Sandia); and F. Wagner (Max Planck Institute) will discuss "Neutral Particle Diagnostics for Ohmically and Auxillary Heated Tokamaks."

On Wednesday afternoon H. Metiu (University of California, Santa Barbara) will speak on the "Possible Role of Electron-Hole Pair Excitation in the Spectroscopy and Dynamics of Absorbed Species"; D. J. Auerbach (IBM Research Lab) will discuss "Experimental Studies of Dynamics of Molecule-Surface Interactions"; the Electronic Materials and Processing Division will hear D. J. Ehrlich, R. M. Osgood Jr and T. F. Deutsch (Lincoln Laboratory, MIT) talk about "Laser Photodeposition" and W. L. Brown (Bell Labs) speak on the "Unique Semiconductor Materials and Structures Produced by Laser and Electron Beams"; the handling of radioactive gases will be discussed by D. O. Coffin (Los Alamos) in "A Tritium Compatible High Vacuum Pumping System" and by P. C. Souers (Lawrence Livermore) in "Organic Getters for Tritium."

On Thursday morning the Vacuum and Fusion Technology Division will jointly hear H. F. Dylla (Princeton University) speak on "Pressure Measurement in Magnetic Fusion Devices." At other sessions L. Kazmerski (Solar Energy Research Institute) will discuss "Chemical Composition and Electrical Properties of Semiconductor Grain Boundaries"; C. Seager (Sandia) will talk on "Passivation of Grain Boundaries in Silicon"; J. M. Burkstand (General Motors Research Labs) will speak on "Chemical Interactions at Polymer-Metal Interfaces and the Correlation with Adhesion"; vacuum-materials interactions will be discussed by J. Pernicka (Pernicka Corporation) in "Paradox of Moisture Measurement: A Modern Technology," by J. Lennon (General Electric Company) in "Vacuum Processes in Drying of Power Transformer Insulation," and by H. S.

Organic Getters for Tritium. P. C. Souers

Fusion Technology

Fueling of Magnetic Confinement Devices. S. L. Milora

THURSDAY/Morning

Thin Films

Chemical Composition and Electrical Properties of Semiconductor Grain Boundaries. L. L. Kazmerski

Passivation of Grain Boundaries in Silicon. C. Seager

Chemical Interactions at Polymer-Metal Interfaces and the Correlation with Adhesion. J. M. Burkstrand

Surface Science

Surface Electronic Structure: From Geometry to Spectroscopy. D. R. Hamann

Photoemission Studies of Surface Core Level Shifts and Their Applications. D. E. Eastman

Electronic Materials and Processing

Measurement of Semiconductor-Insulator Interface States by Deep-Level Transient Spectroscopy. N. M. Johnson

Native Oxide Formation on Compound Semiconductors. G. Lucovsky

Vacuum Technology

Paradox of Moisture Measurement: A Modern Tetralogy. J. Pernicka

Vacuum Processes in Drying of Power Transformer Insulation. J. Lennon

Concrete Enclosures for Large Vacuum System Construction. H. S. Cullingford, M. D. Keller, R. W. Higgins

Vacuum/Fusion Technology

Pressure Measurement in Magnetic Fusion Devices. H. F. Dylla

THURSDAY/Afternoon

Thin Films/Electronic Materials & Processing

Application of Spectroscopic Ellipsometry to Monitor CVD, Plasma and Ion Implantation Processes. J. B. Theeten, M. Erman

Fusion Technology

Surface Physics During RF Heating of Tokamak Plasmas. D. L. Hwang

Inertial-Confined Fusion Technology

Characterization of Inertial Confinement Fusion Targets. B. W. Weinstein

FRIDAY/Morning

Surface Science

Spectroscopic Techniques for the Study of Solid-Liquid Interfaces. E. Yeager, A. Homa, B. D. Cahan, D. Scherson

Photoemission and Other Photoexcitations as Probes of the Solid-Liquid Interface. J. C. Buchholz

Recent Results in Adhesion and Friction of Solid Interfaces: Are There Really Surface Effects? J. Ferrante

Electronic Materials and Processing

Laser Quenched and Impurity Induced Metastable Si(111) Surfaces. Y. Chabal

Surface Structure Determination Using Ion Scattering Spectroscopy. S. Williams

Plasma-Magnetic Fusion Technology

Radiation Damage in Materials for Fusion Reactors. J. L. Scott

Inertial Confined Fusion Technology

The Inertial Confinement Fusion Program in the USA. R. L. Schriever

ICF—An Overview of Where we are Going and Why. D. D. Rockwood

Light Ion Beams as the Driver for Inertial Confinement Fusion. G. W. Kuswa

Heavy Ion Beams as the Driver for Inertial Confinement Fusion. W. B. Herrmannsfeldt

Power Plant Design for Inertial Confinement Fusion—Implications for Pellets. T. G. Frank, J. Pendergrass

FRIDAY/Afternoon

Thin Films/Surface Science

Collisional, Thermal, and Electronic Sputtering. R. Kelly

Sputter Yield During Film Deposition. J. J. Cuomo

Surface Science

Chemical and Electronic Structure of Compound Semiconductor-Metal Interfaces. L. J. Brillson

Electronic Materials and Processing

State-of-the-art of Optical Projection Printing. J. Wilczynski

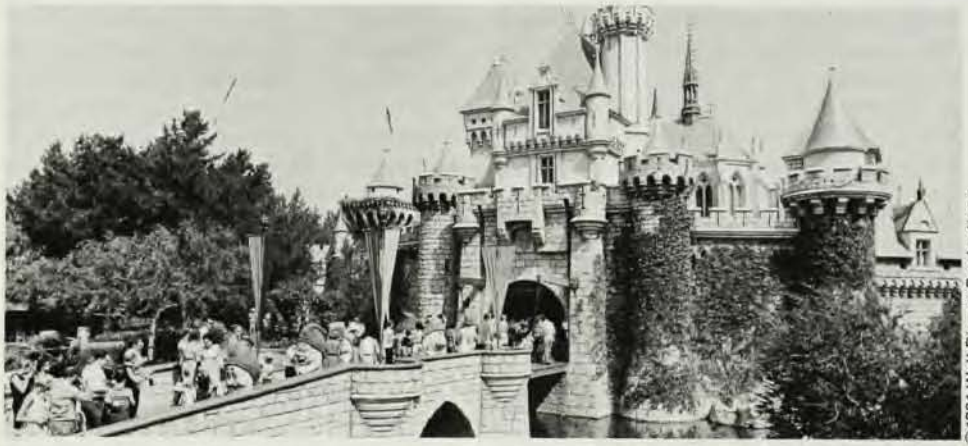
Electron Beam Lithography. D. R. Herriott

Vacuum/Fusion Technology

Unique Design of Doublet and Big Dee Vacuum Vessels. J. E. Miller

The Leak Testing Program of the Doublet II Project. G. Jackson

Cullingford, M. D. Keller, and R. W. Higgins (Los Alamos) in "Concrete Enclosures for Large Vacuum System Construction"; D. R. Hamann (Bell Labs) will speak on "Surface Electronic Structure: From Geometry to Spectroscopy"; D. E. Eastman (IBM T. J. Watson Research Center) will discuss "Photoemission Studies of Core Level Shifts and their Applications"; N. M. Johnson (Xerox, Palo Alto Research Center) will speak on "Measurement of Semiconductor-Insulator Interface States by Deep-Level Transient Spectroscopy"; and G. Lucovsky (North Carolina State University) will talk on "Native Oxide Formation on Compound Semiconductors."



Friday morning the Fusion Technology Division will hold a special session on inertial confinement fusion that will include presentations by R. L. Schriever (Department of Energy) on "The Inertial Confinement Fusion Program in the USA," S. D. Rockwood (Los Alamos) on "ICF—An Overview of Where We Are Going and Why," G. W. Kuswa (Sandia National Labs) on "Light Ion Beams as the Driver for Inertial Confinement Fusion," W. B. Herrmannsfeldt (Stanford Linear Accelerator) on "Heavy Ion Beams as the Driver for Inertial Confinement Fusion," and T. G. Frank and J. Pendergrass (Los Alamos) on "Power Plant Design for Inertial Confinement Fusion-Implication for Pellets"; there will also be a session on plasma materials at which J. L. Scott (Oak Ridge National Lab) will speak on "Radiation Damage in Materials for Fusion Reactors"; Y. Chabal (Bell Labs) will discuss "Laser Quenched and Impurity Induced Metastable Si (111) Surfaces"; and S. Williams (University of California, Los Angeles) will talk on "Surface Structure Determination Using Ion Scattering Spectroscopy."

The Electronic Materials and Processing Division will conclude their program Friday afternoon with a session on microlithography that will include J. Wilczynski's (IBM T. J. Watson Research Center) discussion of the "State-of-the-Art of Optical Projection Printing" and D. R. Herriott's (Bell Labs) talk on "Electron Beam Lithography"; a joint Thin Film/Surface Science session will hear R. Kelly (IBM T. J. Watson Research Center) speak on "Collision, Thermal, And Electronic Sputtering" and J. J. Cuomo (IBM T. J. Watson Research Center) talk about "Sputter Yield During Film Deposition"; and a Vacuum and Fusion Technology joint session will include J. E. Miller's (General Atomic Company) discussion of the "Unique Design of Doublet and Big Dee Vacuum Vessels" and G. Jackson's (General Atomic Company) talk on "The Leak Testing Program of the Doublet II Project"; and J. Brillson will speak on "Chemical and Electronic Structure of Compound Semiconductor-Metal Interfaces."

Ceremonial sessions.

The Society will present its awards for the year at an awards luncheon in the Magnolia Room on Wednesday. The Medard W. Welch Award, commemorating the efforts of Medard Welch in founding and supporting the American Vacuum Society, will be presented to Harrison B. Farnsworth for his pioneering studies of the preparation, structural characterization and properties of atomically clean surfaces. After graduate work at the University of Wisconsin, Farnsworth joined the faculty of the University of Maine in 1924, where he continued to investigate the scattering of electrons by metal surfaces. He went to Brown University in 1928 and remained there for 45 years, during which time he has been a leading researcher on a wide range of topics in surface science and responsible for the graduate-level training of many leaders in the field.

The Second Peter Mark Memorial Award will be presented to Lawrence L. Kazmerski for demonstrating the correlation between the electrical and chemical properties of interfaces in polycrystalline photovoltaic devices. Kazmerski, who received his PhD in electrical engineering from Notre Dame in 1970, was on the faculty of the University of Maine from 1971 to 1977. He joined the Solar Energy Research Institute when it was founded in 1977 and is now Principal Scientist and chief of the photovoltaic devices and measurement branch.

Scholarships for 1981–1982 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. At a plenary session in the Center Ballroom following the luncheon, Farnsworth will give the Welch Award Lecture and the AVS president, T. E. Madey will address the Society.

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

Exhibits and other events

An exhibit of state-of-the-art systems, instruments and components will be held in the Exhibit Hall of the hotel. Descriptions of displays by individual companies begin on page 61. Admission is free and the exhibit will be open from noon to 7:00 pm Tuesday, from 10:00 am to 5:00 pm Wednesday and from 8:00 am to 2:00 pm Thursday.

A bulletin board with announcements of employment opportunities will be maintained throughout the symposium, adjacent to the registration area in the North Lounge Foyer.

Southern California has many attractions, and there are many things to do and see in the surrounding area, including Disneyland, which is directly opposite the hotel and accessible by monorail.

The Local Arrangements Committee will offer several tours as part of the companions' program. On Tuesday a tour group will visit Laguna Beach and the Mission at San Juan Capistrano. Along with its scenic setting, Laguna Beach also provides an opportunity for shopping.

On Wednesday a trip to Hollywood will be offered, including a tour of Universal Studios. Wednesday evening there will be a cruise in Newport Harbor, ending with dinner and entertainment.

Thursday's tour starts with a view of many night spots; it will include lunch at the Farmer's Market and continue with a drive down the coast to the J. Paul Getty Museum, where his collection of art and antiquities will be viewed. —JC