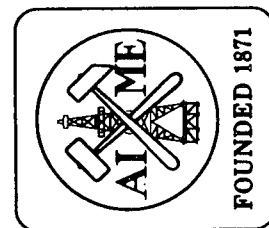
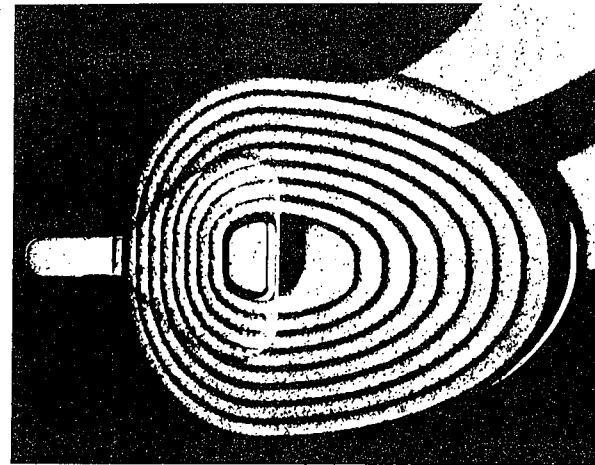


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THE



The
**NORTHERN CALIFORNIA
 METALLURGICAL SECTION**
 of
AIME
 presents
**THE TWELFTH ANNUAL
 ELECTRONIC MATERIALS SYMPOSIUM**

A One-Day Symposium on Electronic Materials
 Featuring Outstanding Authorities
 in Their Respective Fields

**MARRIOTT HOTEL
 GREAT AMERICA PARKWAY
 SANTA CLARA, CALIFORNIA**

Monday
 March 19, 1984
 7:30 A.M.

PROGRAM

Monday, March 19, 1984

Marriott Hotel

- *****
- 7:30 Registration
MORNING SESSION (California Ballroom - Center)
 Session Chairman: Dr. James McVittie
 Stanford U., Stanford, CA
 - 8:30 **Welcoming Remarks and Introduction**
 Dr. Lynn M. Roylance
 H-P Laboratories, Palo Alto, CA
 - 8:40 **"Technology and Engineering Issues in VLSI."**
 Dr. Arnold Riesman
 Microelectronics Center of NC
 Research Triangle Park, NC
 - 9:30 **"Automated Wafer Handling in VLSI Processing."**
 Dr. Josef Berger
 Berger Engineering, Los Altos, CA
 - 10:20 **REFRESHMENTS** (California Ballroom - Right)
 - 10:50 **"Growth and Characterization
 of GaAlAs-GaAs Quantum Well Lasers."**
 Dr. Robert Burnham
 Xerox Palo Alto Research Center, Palo Alto, CA
 - 11:45 **LUNCHEON** (California Ballroom - Left)
 - 12:20 **Ross Tucker Award** (Beyers, Haegel)
 - 12:30 Norman E Thagard, M.D. - Luncheon speaker
 NASA Space Shuttle Astronaut
 - AFTERNOON SESSION** (California Ballroom - Ctr)
 Session Chairman: Dr. Vincent Marrello
 IBM Research, San Jose, CA
 - 1:30 **"VLSI Apocalypse."**
 Dr. Dennis Buss
 Texas Instruments, Dallas, TX
 - 2:15 **"Silicon Materials Characterization for the 1980's."**
 Dr. Guenter H. Schwuttke
 Arizona State U., Tempe, AZ
 - 3:00 **REFRESHMENTS** (California Ballroom - Right)
 - 3:30 **"Magnetic Thins for Recording"**
 Dr. Robert M. White
 Xerox Palo Alto Research Center, Palo Alto, CA
 - 4:15 **"Trench Isolation Prospects
 for Application in CMOS VLSI."**
 Mr. Robert D. Rung
 Hewlett-Packard, Corvallis, OR
 - 5:00 **HOSTED COCKTAIL PARTY**
 (California Ballroom - Left)
 - *****
 - VENDOR'S SHOW** (California Ballroom - Right)
 - 8:00 - 5:00 Vendor's Exhibits

GENERAL INFORMATION

The registration to the Symposium covers admission to the Symposium sessions, extended abstracts of the Symposium presentations, luncheon, a vendor's exhibit, and a partially hosted cocktail hour following the Symposium. Two tokens are included in the registration envelope. Physical limitations require that attendance be limited to the first 400 registrants.

Costs for the Symposium have been kept to a minimum to encourage attendance. A surcharge will be required from those who do not register by March 5, 1984, because of added costs for arrangements after that date. To reserve your place at the Symposium and the luncheon, we urge you to register early by mail, using the attached form. No refunds of registration fees will be made after Monday, March 5, 1984.

During the Symposium, the tenth annual Ross N. Tucker Memorial Award will be presented to two Bay Area students in recognition of their excellence in research.

We are honored to have Norman Thagard, M.D., a NASA astronaut, as our luncheon speaker. Dr. Thagard was a mission specialist on the June 1983 Space Shuttle mission.

The Symposium features a Vendor's exhibit. Information and displays of new materials, processing equipment, and analytical instruments will be presented by representatives of the manufacturers.

A partially hosted cocktail hour will follow the Symposium presentations. This provides an opportunity for informal discussions with symposium speakers, vendors, and attendees.

Registration material and extended abstracts of the Symposium presentations will be provided at the registration booth.

The opening session will begin promptly at 8:30 A.M. Registration begins at 7:30 A.M. The vendor area will be available for setup at 7:00 A.M.

Further questions regarding the Symposium should be directed to Lynn M. Roylance, Hewlett-Packard Laboratories, 3500 Deer Creek Road, Palo Alto, CA 94304. Telephone (415) 857-5278.

ABOUT THE COVER

THIN-FILM PIONEER - "Thin-film" recording head technology in the IBM 3380 disk file enables the system to read and write data at three million characters per second - the first commercial disk product to achieve such a rate. The technology also gives the IBM 3380 the largest information capacity per disk file yet shipped in quantity in the industry - 2.5 billion characters.

ABOUT THE SPEAKERS

Dr. Arnold Riesman has been Vice-President of Semiconductor Research and Technology at the Microelectronics Center of North Carolina since November 1982. He is currently a professor in the Electrical Engineering Department of North Carolina State University, where his interest is in low temperature semiconductor processes and related areas. From 1953 through 1982 Dr. Reisman was affiliated with the IBM Research Division at Columbia University, Poughkeepsie, NY, and Yorktown Heights, NY, where he was manager of its Exploratory Semiconductor Technology Department. The Research conducted within the department ranged from basic studies in materials science, physics and device aspects of semiconductors to advanced circuit and chip design and design automation and chip fabrication in a VLSI framework, at dimensions down to 0.5 micrometers. Personally, he was working in the areas of elevated pressure annealing of ionizing radiation damage, elevated pressure oxidation, plasma assisted gas-solid reactions and high dielectric constant insulators. He is the author of the book, "Phase Equilibria," has published more than 74 technical papers, has presented numerous invited and contributed talks worldwide, and holds more than 40 patents or patents pending. He holds and has held a number of editorial and executive positions in professional societies.

Dr. Josef Berger was born at Hradec Kralove, Czechoslovakia, in 1940. He completed his studies at the Czech Institute of Technology in Prague in December 1963, and undertook post-graduate studies at the Institute of Radio Engineering and Electronics of the Czechoslovak Academy of Sciences, which he completed in January 1968. He was in charge of the Silicon Integrated Circuit Research Laboratory of the institute. His main field of interest was the theory of linear circuits and physical electronics. In 1968 he joined the Integrated Circuits Laboratory, Stanford University, as a Research Associate working on silicon integrated circuits for biomedical applications. In 1972, he became a member of the technical staff of Hewlett-Packard Laboratories in Palo Alto, California, where he was responsible for developing charge coupled devices for digital and analog applications. In July 1977, Dr. Berger joined the Computer Systems Group of Hewlett-Packard as a R & D manager working in n-channel MOS technology and main memory products. In August 1979, he became R & D manager of the Cupertino Integrated Circuits Operation, responsible for process technology, device physics, and product design. Dr. Berger left Hewlett-Packard in 1981 to become Director of Semiconductor Operations at Trilogy Systems, a start-up company in the area of main-frame computers. His responsibilities started with the design of very advanced processing fabrication for super LSI bipolar circuits. He was involved in the conceptual design of technology for the Trilogy computer. Dr. Berger managed process development and circuit design and laid the ground work for manufacturing of high speed super LSI bipolar circuits. Dr. Berger is a senior member of IEEE, elected ADCOM member of the Electron Devices Society, member of Sigma XI, and is listed in "American Men and Women of Science."

Dr. Robert D. Burnham was born in Havre de Grace, Maryland, on March 21, 1944. He received the BS, MS, and PhD degrees from the University of Illinois, Urbana, in 1966, 1968, and 1971, respectively. Dr. Burnham held an NDEA Fellowship from 1966 to 1969 and a General Telephone and Electronics Fellowship from 1969 to 1971. His thesis title was, "The Laser Operation of Solution-Grown Aluminum Gallium Arsenide Phosphide and Indium Gallium Phosphide." In 1971, Dr. Burnham joined the Xerox Palo

Alto Research Center, Palo Alto, California, where he is presently a Research Fellow. His research encompasses three entirely different types of GaAs-GaAlAs double heterostructure laser growth techniques. They are: liquid phase epitaxy (LPE) - 1971-1980, molecular beam epitaxy (MBE) - 1976 to present, and metalorganic chemical vapor deposition (MO-CVD) - 1979 to present. His most significant contributions while at Xerox have been in the area of distributed feedback and high power visible and infrared GaAlAs heterostructure lasers. His current research is involved with quantum well laser structures in the 6400-8600Å wavelength region. Dr. Burnham is a senior member of the IEEE and a member of the AIME. He has co-authored over 180 papers and has over 40 issued patents.

Dr. Norman E. Thagard received his B.S. and M.S. in Engineering Science from Florida State University in 1965 and 1966, respectively. He joined the US marine Corps Reserve in 1966 and was promoted to captain in 1967 and was a naval aviator. He went back to school in 1971 and obtained his M.D. degree from the University of Texas Southwestern Medical School in 1977. He joined NASA as an astronaut candidate in 1978. He was a mission specialist on the Space Shuttle flight STS-7 with R.C. Crippen, F.H. Hauck, J.M. Fabian, and Dr. S. K. Ride.

Dr. Dennis Buss received his Ph.D. degree from the Electrical Engineering Department of the Massachusetts Institute of Technology in 1968. After spending one year on the MIT faculty, he joined Texas Instruments where he has worked for 14 years. In 1974, he spent a teaching sabbatical at MIT. Dennis is currently Vice-President and Director of the Semiconductor Process and Design Center at Texas Instruments. His research interests have ranged from HgCdTe infrared imaging focal planes to silicon charge-coupled devices.

Dr. Guenter Schwuttke received the B.S. degree in 1948 and the Ph.D. degree magna cum laude in 1952 from the University of Munich, Germany. From 1950 to 1952 he was also a Research Associate at the Max Planck Institute. On completion of his studies, he joined Siemens Research, Munich, Germany, as a manager. He spent two years as a consultant to the U.S. Department of Defense before joining General Telephone and Electronics as a Senior Scientist. In 1963 he joined IBM where he has been Senior Physicist and manager of various development groups. His work focused on basic research and development in semiconductor materials science and semiconductor processing. He consulted on applied problems in materials, processing, radiation damage, ion-implantation, and crystal growing, and was a specialist in technology transfer. Since 1983, Dr. Schwuttke has been the Director of the Semiconductor Materials Research Laboratory at Arizona State University, Tempe, Arizona. Dr. Schwuttke is the holder of approximately 60 U.S. patents and the author of over 80 publications.

Dr. Robert M. White is principal scientist at Xerox PARC. His research interest spans several areas of solid state physics including the optical properties of magnetic materials and magnetic recording. He received his B.S. from MIT and his PhD from Stanford. He is a fellow of the American Physical Society, the recipient of the Alexander von Humboldt Prize and a distinguished lecturer of the Magnetic Society. He is the author of Quantum Theory of Magnetism and of Long Range Order in Solids. Dr. White is also a Consulting Professor of Physics at Stanford.

Mr. Robert D. Rung was born on September 15, 1954 in Sharon, PA. He received the BS and MS degrees coterminally from Stanford University in 1976. Since then, he has been with Hewlett-Packard Laboratories as a member of the Technical Staff working on CMOS technology. In 1981 he became Project Manager for CMOS process development. During 1982 he worked as a Technology Exchange Engineer in the Semiconductor Device Engineering Laboratory of the Toshiba Corporation, Kawasaki, Japan. In July 1983 he joined Hewlett-Packard's Corvallis Components Operation as Manager of the Silicon Technology section, where he is primarily concerned with the development of proprietary advanced MOS processes. His main interests are in the areas of CMOS process technology, semiconductor device physics, process simulation, and device isolation. Mr. Rung is a member of the Electrochemical Society, Tau Beta Pi, and Phi Beta Kappa.

1984 Ross Tucker Award Recipients

Robert Beyers Materials Science Dept. Stanford University	Nancy Haegel Materials Science Dept. U. C. Berkeley
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CONFERENCE COMMITTEE

<i>Douglas Collins</i> Hewlett-Packard	<i>Aare Onton</i> IBM
<i>Vince Marrello</i> IBM	<i>Kurt Petersen</i> Transensory Devices
<i>Robert McDonald</i> Intel	<i>Dilip Rajdev</i> Consultant
<i>James McVittie</i> Stanford University	<i>Krishna Saraswat</i> Stanford University
<i>Eugene Meieran</i> Intel	<i>Dixie Sinkovits</i> Perkin-Elmer

CONFERENCE CHAIRMAN

Lynn M. Roylance
Hewlett-Packard Laboratories
3500 Deer Creek Road
Palo Alto, CA 94304
(415) 857-5278

REGISTRATION FORM - 1984 12th AIME ELECTRONIC MATERIALS SYMPOSIUM

Name: _____ Title: _____
 Organization: _____
 Mailing Address: _____
 City, State: _____ ZIP: _____

	Before <u>March 5, 1984</u>	After <u>March 5, 1984</u>
() Registration Fee	\$35	\$45
() Full-Time Registered Student	\$15	\$20

Make check payable to: "No. Cal. Met. Section, AIME", and send with the above information to: L. M. Roylance, Hewlett-Packard Laboratories, 3500 Deer Creek Road, Palo Alto, CA 94304; (415) 857-5278. Do not send purchase orders. Should the Symposium sell out before your registration is received, the fee will be returned by mail. We regret that notice of cancellation cannot be guaranteed for registration applications received after March 9th.