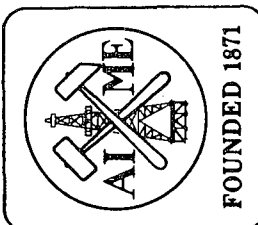
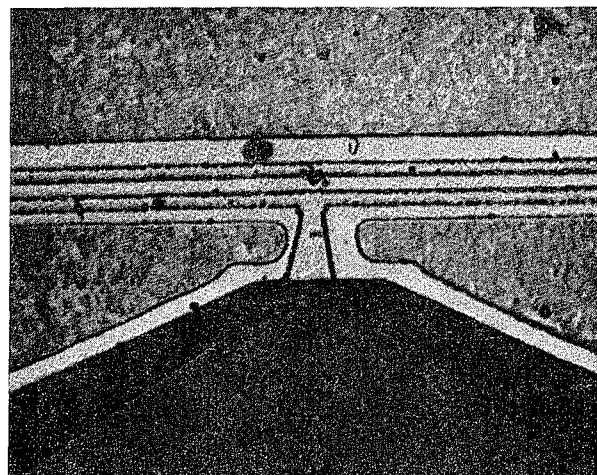


Non Profit  
 Organization  
 US Postage Paid  
 Los Altos, CA 94022  
 Permit No. 383

METALLURGICAL  
 SOCIETY OF AIME  
 THE NORTHERN CALIFORNIA METALLURGICAL SECTION



THE



ACOUSTIC MICROGRAPH

THE  
 NORTHERN CALIFORNIA  
 METALLURGICAL SECTION  
 OF AIME  
 PRESENTS  
 THE EIGHTH ANNUAL  
 ELECTRONIC MATERIALS SYMPOSIUM

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

HYATT PALO ALTO  
 4290 EL CAMINO REAL  
 PALO ALTO, CA 94306

THURSDAY  
 March 13, 1980  
 7:30 A.M.

PROGRAM

Thursday, March 13, 1980  
 Hyatt Palo Alto

\*\*\*\*\*

7:30 Registration

MORNING SESSION (Circus Maximus Central)

Session Chairman: Dr. Dilip Rajdev  
 Lockheed MSC  
 Sunnyvale, CA

8:30 Welcoming Remarks and Introduction  
 Dr. Robert D. Burnham  
 Xerox PARC  
 Palo Alto, CA

8:40 "GaAs IC's for Ultra-High Frequency VLSI"  
 Dr. Richard C. Eden  
 Rockwell International  
 Thousand Oaks, CA

9:30 "The Practical Limits of MOS VLSI"  
 Dr. Richard D. Pashley  
 Intel Corporation  
 Santa Clara, CA

10:20 COFFEE BREAK

10:50 "Materials Technology Challenges in GaAs for IC Development"  
 Dr. D. Howard Phillips  
 Lockheed MSC  
 Sunnyvale, CA

11:45 LUNCHEON (Circus Maximus North)

12:20 Ross N. Tucker Memorial Award Presentation to Richard Gold, Department  
 of Electrical Engineering, Stanford University, Stanford, CA

12:30 "Electronic and Energy Applications of New Amorphous Synthetic Materials"  
 Stanford R. Ovshinsky  
 Energy Conversion Devices, Inc.  
 Troy, MI

AFTERNOON SESSION (Circus Maximus Central)

Session Chairman: Frank Perlaki  
 Hewlett-Packard Corp.  
 Palo Alto, CA

1:30 "Application of CW Beam Processing to Semiconductor Device Fabrication"  
 Prof. James F. Gibbons  
 Stanford University  
 Stanford, CA

2:15 "Voltage Contrast as an IC Diagnostic Tool"  
 Dr. Anand Gopinath  
 MIT Lincoln Lab  
 Lexington, MA

3:00 COFFEE BREAK

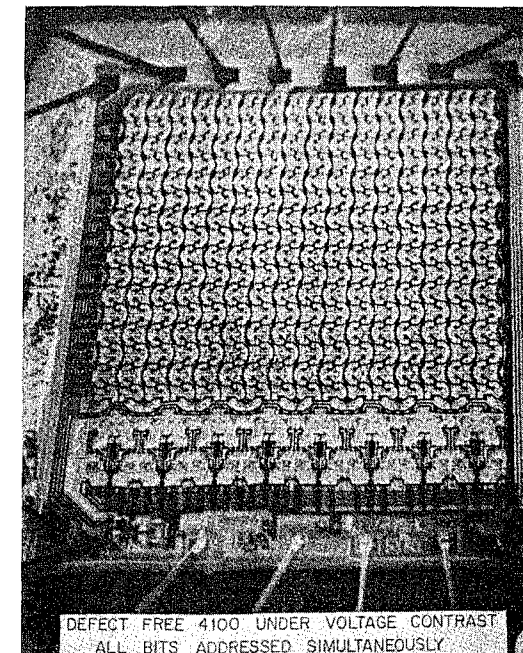
3:30 "Integrated Circuits as Viewed Through the Acoustic Microscope"  
 Prof. Calvin F. Quate  
 Stanford University  
 Stanford, CA

4:15 "Wafer Production Advantages of X-Ray Lithography Using a Synchrotron  
 Radiation Source"  
 Dr. Warren D. Grobman  
 IBM T. J. Watson Research Center  
 Yorktown Heights, NY

5:00 HOSTED COCKTAIL PARTY (Circus Maximus North)

\*\*\*\*\*

8:00 - 5:00 Vendors Exhibits (Circus Maximus South)



DEFECT FREE 4100 UNDER VOLTAGE CONTRAST  
 ALL BITS ADDRESSED SIMULTANEOUSLY

GENERAL INFORMATION

1. The registration fee for the symposium covers admission to symposium sessions, extended abstracts of symposium presentations, luncheon, a vendor's exhibit, and portion of a hosted cocktail hour following the symposium. Physical limitations require that attendance be limited to the first 350 registrants.
2. Costs for the symposium have been kept to a minimum to encourage attendance. A surcharge will be required from those who do not preregister by Monday, March 3, 1980 because of added costs for arrangements after that date. To reserve your place at the symposium and luncheon, we urge you to register early by mail, using the form provided. No refund of registration fees will be made after Monday, March 3, 1980.
3. During the symposium, the sixth annual Ross N. Tucker Memorial Award will be presented to Richard Gold, Department of Electrical Engineering, Stanford University, for his work on developing materials for solid state solar energy devices.
4. We are honored to have Stanford R. Ovshinsky as our luncheon speaker. His topic will be "Electronic and Energy Applications of New Amorphous Synthetic Materials."
5. A feature of this symposium will be a vendor's exhibit. Information displays on new materials, processing equipment and analytical instruments will be presented by manufacturing representatives.
6. A hosted cocktail party will follow the final symposium presentation, providing an opportunity for informal discussions with symposium speakers and guests.
7. Registration material and extended abstracts of the symposium presentation will be available at the symposium. The opening session will begin promptly at 8:30 a.m.
8. Further questions regarding the symposium should be directed to Robert D. Burnham, Xerox PARC, 3333 Coyote Hill Rd., Palo Alto, CA 94304. Telephone: (415) 494-4179.

**ABOUT THE SPEAKERS**

DR. RICHARD C. EDEN was born in Anamosa, Iowa, on July 10, 1939. He received the BS degree from Iowa State University, Ames, the MS degree from the California Institute of Technology, Pasadena, and the PhD degree from Stanford University, all in Electrical Engineering. After receiving the MS degree, he worked at the Advanced Systems Development Laboratory of IBM, San Jose, California. His PhD dissertation work involved detailed electronic energy band studies on GaAs, GaP, and Si using photoemission, work he extended after joining the Science Center/Rockwell International in 1968, to surface state observations on silicon by vacuum photoemission and internal photoemission in MOS structures. Following this, he carried out development work on high-speed, high-efficiency heterojunction III-V alloy 1.06  $\mu\text{m}$  avalanche photodiodes and on ultrahigh sensitivity, high-speed hybrid-integrated preamplifiers for these detectors. He was also involved in the design and analysis of a number of special device structures including the recently successfully demonstrated GaAs CCD. His most recent efforts have been focused toward the development of a very high-speed ultralow power planar GaAs digital integrated circuit technology with gate densities and power dissipation levels compatible with LSI or VLSI. Currently, he is Principal Scientist for Solid State Electronics at the Rockwell International Science Center, Thousand Oaks, California. Dr. Eden is a member of the American Physical Society, Eta Kappa Nu, Tau Beta Pi, Phi Kappa Phi, Phi Eta Sigma, Pi Mu Epsilon, and Sigma Xi.

DR. JAMES F. GIBBONS was born in Leavenworth, Kansas, and educated at Northwestern University (BS, 1953) and Stanford (PhD, 1956). He held National Science Foundation and National Academy of Sciences Fellowships for his entire graduate study career (1953-1956), and was awarded a Fulbright Fellowship for post-doctoral research at Cambridge University, Cambridge, England, in 1956-1957. He joined the Stanford faculty in 1957, and was appointed Professor of Electrical Engineering in 1964. His principal scientific interests are in the areas of ion implantation, laser annealing and solar energy. He is a Fellow of the IEEE and a member of the National Academy of Engineering. He was awarded the Western Electric Fund Award for Excellence in Teaching in 1971.

DR. ANAND GOPINATH received the PhD degree from the University of Sheffield, England, in 1965 and was awarded the degree of Doctor of Engineering, also from Sheffield, in 1978. He taught at the University College of North Wales, Bangor, where he was Reader in Electronics, until 1978; since July 1978 he has been with M.I.T. Lincoln Laboratory. His interests are in the areas of: semiconductor devices and device physics, electron-beam probes and their applications in the device and processing areas, and microwave theory and techniques.

DR. WARREN D. GROBMAN received the BA degree in Physics from the University of Pennsylvania, Philadelphia, Pennsylvania, in 1964; and the MA and PhD degrees in Physics from Princeton University, Princeton, New Jersey, in 1966 and 1967, respectively. He was a member of the Technical Staff at Bellcomm Inc. from 1967 to 1969. In 1969, he joined the IBM Thomas J. Watson Research Center, Yorktown Heights, New York, as a Research Staff member. At IBM he has worked in the field of experimental photoemission spectroscopy and has done theoretical work on the electronic structure of solids and in the area of many-body systems. Since 1976, he has worked in the area of high-resolution lithography. Currently, he is a Manager of a group responsible for applications of electron-beam lithography and for development of techniques in X-ray lithography. He is also on the Proposal Review Committee of the Stanford Storage Ring Laboratory. Dr. Grobman is a member of Sigma Xi, the American Physical Society, and the Electrochemical Society.

MR. STANFORD R. OVSHINSKY has worked in the field of amorphous films since 1957. In 1960, with his wife Iris, he founded Energy Conversion Devices, Inc., Troy, Michigan, to continue research and development in amorphous materials for use in various phases of information storage and control combined with the concepts of energy conversion. He is presently President of the company where, in addition to his recent developments utilizing amorphous materials for imaging, he has developed new amorphous materials for energy conversion use. He has over 60 U.S. patents, is the author of numerous scientific papers ranging from neurophysiology to amorphous semiconductors, and in 1968 was the recipient of the Diesel Gold Medal for Invention presented by the German Inventors Association. He is Adjunct Professor of Engineering Sciences, College of Engineering, Wayne State University.

DR. RICHARD D. PASHLEY received the BA degree in Physics from the University of Colorado, Boulder, in 1969, and the MS and PhD degrees in Electrical Engineering from the California Institute of Technology, Pasadena, in 1970 and 1974, respectively. Presently, he is Manager of Static RAM Engineering at Intel Corporation, Santa Clara, California. His department is responsible for the development of the HMOS technologies and the 2125/2141 product lines. As an individual contributor he developed the technique of on-chip substrate back-biasing and holds several key MOS patents.

**CONFERENCE COMMITTEE**

M. G. Craford (Hewlett-Packard Corp.)	E. S. Meieran (Intel Corp.)
K. Sree Harsha (San Jose State Univ.)	F. Perlaki (Hewlett-Packard Corp.)
J. H. Koenig (Physical Electronics)	D. Rajdev (Lockheed Corp.)
V. Marrello (IBM Corp.)	G. B. Stringfellow (Hewlett-Packard Corp.)
R. C. McDonald (Intel Corp.)	T. W. Watson (General Instruments Corp.)

**CONFERENCE CHAIRMAN**

Robert D. Burnham  
Xerox PARC  
3333 Coyote Hill Road  
Palo Alto, California 94304  
(415) 494-4179

DR. D. H. PHILLIPS provides technical leadership and direction to the Lockheed Microelectronics Center and company-sponsored programs to develop GaAs and Silicon Microelectronics technologies. He was General Chairman of the Gallium Arsenide Integrated Circuit Symposium in 1979 and Conference Chairman for the SOS Technology Workshop in 1978. He obtained the PhD degree in Electrical Engineering and Computer Science, and the MA degree in Nuclear Engineering. Technical fields of interest include integrated circuit design, semiconductor device fabrications, and the analysis of transient and permanent radiation effects in semiconductor and dielectric materials.

DR. CALVIN F. QUATE was born in Baker, Nevada. He received the BS degree in Electrical Engineering from the University of Utah in 1944, and the PhD degree from Stanford University in 1950. In 1949, he joined the technical research staff at Bell Laboratories in Murray Hill, New Jersey, where he was later appointed Associate Director of Electronics Research. He joined Sandia Corporation in Albuquerque, New Mexico, in 1959; and in 1960, became Vice President and Director of Research. Stanford University appointed him Professor of Applied Physics and Electrical Engineering in 1961; in 1969 he assumed the Chairmanship of the Applied Physics Department at Stanford and held this position until 1972. In 1970 he was elected to membership in the National Academy of Engineering. From 1972-1974 he served as an Associate Dean in the School of Humanities and Sciences at Stanford. In 1975 he was elected to membership in the National Academy of Sciences. In 1978 he accepted the Chairmanship of the Applied Physics Department for a second term. Dr. Quate's major research interest is in the field of acoustic imaging. He is the author and co-author of 100 scientific publications. He is a member of Tau Beta Pi, Sigma Xi, the American Physical Society, the Acoustical Society and a fellow of the IEEE.

**REGISTRATION FORM**

**1980 EIGHTH AIME ELECTRONIC MATERIALS SYMPOSIUM**

Name \_\_\_\_\_ Title \_\_\_\_\_  
 Organization \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
 Registration Fee: \_\_\_\_\_

( ) AIME Member	Payment Received Before March 3, 1980	Payment Received After March 3, 1980
( ) Non-Member	\$23.00	\$33.00
( ) Full-Time Registered Student	\$28.00	\$38.00
	\$10.00	\$20.00

Make checks payable to: "No. Cal. Met. Section, AIME," and send with the above information to: Robert D. Burnham, Xerox PARC, 3333 Coyote Hill Rd., Palo Alto, CA 94304. Do not send Purchase Orders. Please make sure your name and affiliation are identified. Others may register by supplying the information requested above and sending it with the registration fee.

PLEASE SHARE THIS INFORMATION WITH YOUR COLLEAGUES WHO MAY WISH TO ATTEND THE SYMPOSIUM.