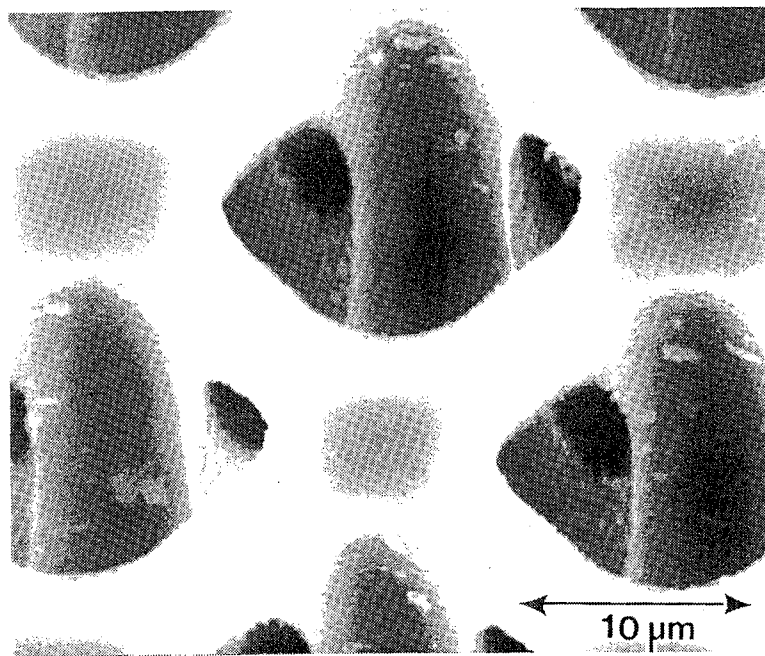


Non Profit
 Organization
 US Postage Paid
 Los Altos, CA 94022
 Permit No. 383



Micromachined Silicon Guide for Nerve Fibers

THE 19th 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
 April 1, 1991
 7:30 A.M.

The
 NORTHERN CALIFORNIA
**ELECTRONIC MATERIALS
 SYMPOSIUM**



PROGRAM

Monday, April 1, 1991
 Marriott Hotel

7:30 Registration
MORNING SESSION (California Ballroom - Ctr/Left)

Session Chair: Dr. John Pierce
 National Semiconductor
 Santa Clara, CA

8:30 **Welcoming Remarks and Introduction**
 Dr. Kent Carey,
 Hewlett-Packard, Palo Alto, CA

8:40 **"Vapor Phase Wafer Cleaning Technology."**
 Dr. Bruce Deal
 Advantage Production Technology, Inc., Sunnyvale, CA

9:25 **"Applications and Issues for Fully Integrated
 Ferroelectric-Silicon Technology."**
 Dr. Edward Myers
 National Semiconductor, Santa Clara, CA

10:10 **REFRESHMENTS** (California Ballroom - Ctr/Right)

10:40 **"Vertical Cavity Lasers and Modulators Grown by MBE."**
 Prof. Larry Coldren
 University of California at Santa Barbara, Goleta, CA

11:30 **LUNCHEON**

12:15 **The seventeenth annual Ross Tucker Award**

12:30 **"Future Materials and Competitive Issues in ULSI."**
 Dr. Yoshio Nishi
 Hewlett-Packard, Palo Alto, CA

AFTERNOON SESSION (California Ballroom - Ctr/Left)

Session Chair: Prof. Simon Wong
 Stanford University
 Stanford, CA

1:30 **"Thin-Film Transistor Technology."**
 Dr. Anne Chiang
 Xerox PARC, Palo Alto, CA

2:15 **"Technology Development for a Chronic Neural Interface."**
 Prof. Gregory Kovacs
 Stanford University, Stanford, CA

3:00 **REFRESHMENTS** (California Ballroom - Ctr/Right)

3:30 **"High-Tc Superconductivity: The Emerging Devices
 and Their Applications."**
 Prof. Malcolm Beasley
 Stanford University, Stanford, CA

4:15 **"Materials Issues in High Performance Multi-Chip Packaging."**
 Dr. Scott Westbrook
 Digital Equipment Corporation, Cupertino, CA

5:00 **HOSTED COCKTAIL PARTY**
 (California Ballroom - Ctr/Right)

VENDOR'S SHOW (California Ballroom - Ctr/Right)

8:00 - 5:00 Vendor's Exhibits

GENERAL INFORMATION

The registration to the Symposium covers admission to the Symposium sessions, abstracts of the Symposium presentations, luncheon, a vendor's exhibit, and a partially hosted cocktail hour following the Symposium. Beverage tokens for the cocktail hour will be available in the vendor area during the afternoon sessions. 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 discounted registration fee is available until March 25, 1991 because of the lower cost of handling preregistration and early arrangements commitments. 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 25, 1991.

During the Symposium, the seventeenth annual Ross N. Tucker Memorial Awards will be presented to three Bay Area students in recognition of excellence in research.

We are honored to have Dr. Yoshio Nishi of Hewlett-Packard as our luncheon speaker. Dr. Nishi has been a leading developer of DRAM technology and has managed semiconductor technology in both Japan and the US. He is in a unique position of perspective on both the technical and competitive aspects of the semiconductor industry.

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 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 Dr. Kent Carey, Hewlett-Packard, B26M, P.O. Box 10350, Palo Alto, CA 94303-0867. (415) 857-7468.

ABOUT THE COVER

XX
 A scanning electron micrograph of a micromachined silicon guide for nerve fibers. (Photo courtesy of Prof. Gregory Kovacs, Stanford University)
 XXX

ABOUT THE SPEAKERS

Prof. Malcolm R. Beasley has a B. of Eng. Phys. (1962) and a PhD (1968) from Cornell University. He then went to Harvard as Research Fellow and subsequently member of the Faculty. In 1974 he joined the Faculty of Stanford, becoming a full Prof. of Appl. Phys. and (by courtesy) EE in 1979. He served as Chair of the Dept. of Appl. Phys. at Stanford from 1985-1989. In 1990 he was named the Theodore and Sydney Rosenberg Prof. of Appl. Phys. He is a member of Tau Beta Pi, a Fellow of the APS and a member of the AAAS. He is the recipient of the Dean's Award for Superior Teaching at Stanford. He has served as a consultant to the NSF, DARPA, and various industrial laboratories. He has also served on various panels of the NRC of the Natl. Acad. of Sc. Prof. Beasley's general research interests are in low temperature condensed matter physics. Much of his work involves pure and applied superconductivity. His current activities are focused principally on the new high temperature oxide superconductors.

Dr. Anne Chiang is a Principal Scientist and Manager of Polysilicon Technology in the Electronics and Imaging Laboratory of the Xerox Palo Alto Research Center (PARC). She received a Ph. D. in physical chemistry from USC in 1969. From 1969, she was with Memorex Corporation, working on magnetic recording media and xerographic recording on microfilms. She joined Xerox PARC in 1972 and has been conducting research on optical recording, flat panel displays, laser crystallization, SOI, and thin-film transistors. She initiated the work on polysilicon thin-film transistors at PARC in 1985 and is now responsible for the program for its application to printer, image scanner and displays. Dr. Chiang is a Senior Member of the IEEE, and a member of the Society of Information Display, MRS and American Chemical Society. She has authored or coauthored over 60 technical papers and holds 8 patents.

Prof. Larry Coldren received his PhD from Stanford University in 1972 and joined the research area at AT&T Bell Labs, where he spent thirteen years working in the areas of surface-acoustic-wave devices, microfabrication technology, long wavelength diode lasers, and techniques for tuning diode lasers. In 1984 he was appointed Professor of Electrical & Computer Engineering and Materials at UC-Santa Barbara, where he leads a large research effort on Optoelectronic devices and related technologies. His group is responsible for many advances in the areas of surface-emitting lasers, tunable lasers, waveguide modulators and surface-normal modulators. Prof. Coldren is an Associate Director of QUEST, an NSF Science and Technology Center on quantum-confined structures and he is Director of the Santa Barbara Optoelectronics Technology Center (OTC) which is part of a multicampus DARPA optoelectronics technology center, of which he is a Co-Director.

Dr. Bruce E. Deal has an AB in Chem. from Nebraska Wesleyan University (1950) and the MS (1953) and PhD (1955) degrees in Phys. Chem. from Iowa State U. Since 1959 he has been associated with the semiconductor industry in Silicon Valley. The majority of this time (1963-1989) was spent with the Fairchild Research Center. Dr. Deal directed research programs involving many aspects of semiconductor materials and processing technology, with special emphasis on silicon oxidation kinetics and electrical properties of oxidized silicon. These investigations led to an advanced understanding of semiconductor surface physics and chemistry and the development of stable MOS technology. In 1989, Dr. Deal joined ADVANTAGE Production Technology, Inc., as Vice President of Development. He is also a Consulting Prof. of EE at Stanford and an Adjunct Prof. of EE at Santa Clara U. He is a Fellow in the IEEE, past President of The Electrochem. Soc., and has been active in many other professional societies.

Prof. Gregory T. A. Kovacs was born in Vancouver, Canada, on March 15th, 1961. He received the B.A.Sc. degree in EE from the U. of British Columbia in 1984, the M.S. degree in Bioengineering from the U. of California, Berkeley in 1985, and the Ph.D. degree in EE from Stanford in 1990. His industry experience includes the design of high-speed data acquisition systems for radar and test instruments, the design of a precision pulsed-electroplating system for gallium arsenide device fabrication, patent law consulting, and the co-founding of three private companies. He recently joined Stanford as Assist. Prof. of EE. His present research areas include neural/electronic interfaces, solid-state sensors and actuators, micromachining, integrated circuit fabrication, medical instruments, and biotechnology. He is also currently completing the requirements for the M.D. degree at Stanford.

Dr. Edward R. Myers is a staff engineer at National Semiconductor in Santa Clara, CA. He joined National's Ferroelectric Tech. Group in 1988, where he has been working on ferroelectric thin films for use in non-volatile memory applications. He is presently responsible for ferroelectric contact and metallization technology, back-end processing, materials characterization including TEM, SEM and RBS, advanced materials development and he is the principal investigator for the Advanced Ferroelectric Memory Cell Development contract. He developed, chaired and edited the book for the Materials Research Society (MRS) symposium on FERROELECTRIC THIN FILMS and will be chairing the MRS Fall 91 Symposium FERROELECTRIC THIN FILMS II. He received the B.S. degree in Metallurgy and Mining from the U. of Ill. and the M.Sc. and the Ph.D. degree in Material Science and Eng. from North Carolina State U. He is a member of the MRS and the American Ceramics Society.

Dr. Yoshio Nishi has a BS (1962) in Metallurgy from Waseda University and a Ph.D. (1973) in Electronic Eng. from the U of Tokyo. In 1962 he joined Toshiba Corporation. He worked on the process of impurity redistribution on Si-SiO₂ at elevated temperature. He discovered the paramagnetic centers *P_A*, *P_B*, and *P_C* at the Si-SiO₂ interface. From 1968 to 1969 he was a Res. Assoc. at Stanford, working on high field transport in semiconductors. In 1969 returned to the Toshiba R&D Center and supervised the non-volatile memory activity, working on the world's first NMOS non-volatile static memories of 256-bit and 1024-bit. In 1976 he was appointed Senior Researcher of NEC-Toshiba Information Systems Laboratory. In 1979 he was Department Head of Toshiba Semiconductor Device Engineering Laboratory, responsible for memory technology. In 1986 he joined HP Labs. as Director of the Silicon Process Laboratory, leading silicon CMOS VLSI process technology R&D. He is also a Consulting Prof., Dept. of EE at Stanford. Dr. Nishi has published about sixty papers and books and holds more than fifty patents in the U.S. and Japan. He is a Fellow of the IEEE, a member of the Japan Soc. of Appl. Phys., Inst. of Electronics, Comm. Eng. of Japan and the Electrochem. Soc. He is also serving on the Committee of Japan, NRC, and as an outside Board Member, Board of Directors for Tech. Modeling Assoc. and KLA Instr. Corp..

Dr. Scott Westbrook received the B.S. degree in 1978 and the M.S. degree in 1980 in electrical engineering from the Massachusetts Institute of Technology. Since coming to California in 1980, he has worked in succession for Hewlett-Packard, Trilogy Systems, and now Digital Equipment Corporation. During his career he has researched and developed MOS power devices, MOS memory, bipolar wafer scale technology and most recently thin-film interconnect for multi-chip packaging. He has participated in the development of the copper/polyimide interconnect technology for multi-chip packaging that is used in the new VAX 9000 mainframe/super computer. Currently he is responsible for activities in design, test, and product engineering for high density interconnect in multi-chip packaging technology.

1991 Ross Tucker Award Recipients

(three awards to be announced this year)

SYMPOSIUM COMMITTEE

<i>Jerry Hurst</i>	<i>Michael E. Thomas</i>
IBM	National Semiconductor
<i>David F. Kyser</i>	<i>Robert Thornton</i>
AMD	Xerox
<i>Eugene Meieran</i>	<i>Chiu H. Ting</i>
Intel	Intel
<i>Aare Onton</i>	<i>Simon Wong</i>
IBM	Stanford
<i>John Pierce</i>	<i>Cary Yang</i>
National Semicond.	Santa Clara University
<i>Fernando Ponce</i>	<i>John Yue</i>
Xerox	AMD
<i>Martin Scott</i>	
Hewlett-Packard	

SYMPOSIUM CHAIR

Kent Carey
Hewlett-Packard, B26M
P.O. Box 10350
Palo Alto, CA 94303-0867
(415) 857-7468

SYMPOSIUM SPONSORS

Northern California Section of TMS
IEEE Electron Devices Society, Santa Clara Valley
Chapter

REGISTRATION FORM - 19th ELECTRONIC MATERIALS SYMPOSIUM (1991)

Name:	Title:
Organization:	Mailstop:
Mailing Address:	
City, State:	ZIP:
Symposium date: April 1, 1991	Pre-registration by March 25, 1991
Regular Registration (please circle)	Registration Fee
Full-Time Registered Student	
	\$55
	\$40
	\$20

Make check payable to: "Electronic Materials Symposium", and send with the above information to: Dr. Kent Carey, Hewlett-Packard, B26M, P. O. Box 10350, Palo Alto, CA 94303-0867. (415) 857-7468. Do not send purchase orders. The Tax ID number for the Symposium is: 25-1484913. Please make sure your name and affiliation are clearly identified.