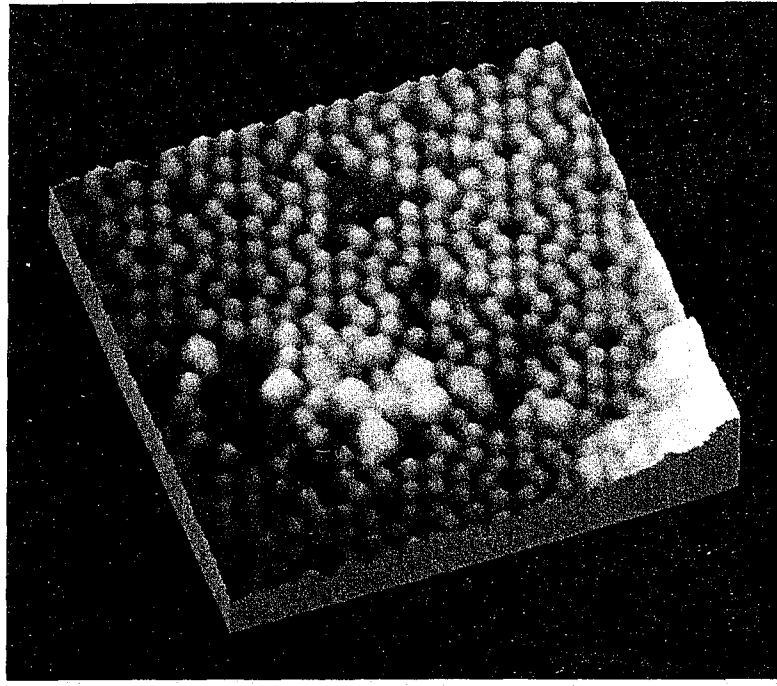


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The
 NORTHERN CALIFORNIA
**ELECTRONIC MATERIALS
 SYMPOSIUM**



Silicon Surface by STM.

THE 17th 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 27, 1989
 7:30 A.M.

PROGRAM

Monday, March 27, 1989

Marrriott Hotel

7:30 Registration
MORNING SESSION (California Ballroom - Center)

Session Chair: Dr. David Kyser
 Philips Research Laboratories
 Sunnyvale, CA

8:30 **Welcoming Remarks and Introduction**
 Dr. Robert L. Thornton
 Xerox PARC, Palo Alto, CA

8:40 **"Advanced Interconnect Technology."**
 Prof. Simon Wong
 Stanford University, Stanford, CA

9:30 **"Excimer Laser Lithography."**
 Dr. David Shaver
 Lincoln Laboratories, Lexington, MA

10:20 **REFRESHMENTS** (California Ballroom - Right)

10:50 **"Advanced BiCMOS Technology."**
 Dr. Tad Yamaguchi
 Tektronix, Inc., Beaverton, OR

11:45 **LUNCHEON** (California Ballroom - Left)

12:20 **The fourteenth annual Ross Tucker Award**

12:30 **"Animals: Helping Them to Survive."**
 Ms. Terri McKim
 United Animal Nations

AFTERNOON SESSION (California Ballroom - Ctr)

Session Chair: Prof. Cary Yang
 Santa Clara University
 Santa Clara, CA

1:30 **"Compound Semiconductor Materials for Visible Emitters."**
 Dr. M. George Craford
 Hewlett-Packard, Optoelectronics Div., San Jose, CA

2:15 **"Magnetic Materials for Information Storage."**
 Prof. Geoffrey Bate
 Santa Clara University, Santa Clara, CA

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

3:30 **"Amorphous Semiconductor Electronics."**
 Dr. Robert Street
 Xerox PARC, Palo Alto, CA

4:15 **"Applied Scanning Tunneling Microscopy."**
 Dr. John Foster
 IBM Almaden Research Center, San Jose, CA

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

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, 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 20, 1989 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 20, 1989.

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

We are honored to have Ms. Terri McKim of United Animal Nations as our luncheon speaker. Ms. McKim will describe, among other things, her involvement with the recent arctic whale entrapment and Yellowstone fire.

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. Robert L. Thornton, Xerox PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304. (415) 494-4178.

ABOUT THE COVER

The topology of the <111> surface of a silicon crystal as probed with the scanning tunneling microscope. The surface has been annealed in ultra-high vacuum to allow the atoms to reconfigure themselves into their lowest energy positions, known as the 7x7 atomic reconstruction. (Photo courtesy David Biegelsen, Xerox PARC)

ABOUT THE SPEAKERS

Prof. Geoffrey Bate was born and educated in England and has a Ph.D. in Physics from Sheffield University. He worked for IBM from 1959 to 1978 as Manager of Recording Physics. From 1978-86 he was Senior Vice President at Verbatim Corporation. He is now Professor of Electrical Engineering & Computer Science and Associate Dean of Engineering at Santa Clara University, California.

Dr. M. George Craford was born on December 29, 1938 in Sioux City, Iowa. He received the Ph.D. degree in physics from the University of Illinois in 1967. His research has been concerned with the growth and properties of semiconductor materials and devcies, primarily in the area of infrared and visible LED devices. In addition to his LED work he has investigated GaAsP and GaAlAs injection lasers, GaP high temperature rectifiers, p/n/p/n switches, and thyristors, and monolithic LED displays. He has over 50 technical publications and patents. In 1976 he received the Electronics Division Award of the Electrochemical Society, for his work on high efficiency nitrogen doped GaAsP LED's.

From 1967 to 1979 Dr. Craford was employed by the Monsanto Company where he was Director of Research and Technology of the Monsanto Electronics Division. Since 1979 he has been employed by Hewlett Packard Company where he is the R&D Technology manager of the Optoelectronics Division. Dr. Craford is a member of the IEEE, and the Society of Information Display.

Dr. John S. Foster graduated with a B.A. in Physics from the Univ. of California, San Diego in 1980 and a Ph.D. in Applied Physics from Stanford University in 1984. He became the Marvin Chodorow Fellow at Stanford in 1984 and joined IBM in the Research Division in 1986 at Almaden. He has worked on high pressure equation-of-state experiments with high energy lasers, solar magnetic field structure and sun-weather relationships, acoustic microscopy in superfluid helium, and most recently at IBM, scanning tunneling microscopy. His current interest involves imaging individual organic molecules and manipulating them with the STM.

Ms. Terri McKim's involvement with animals began at the age of six when she brought home her first stray dog. As a volunteer for the Humane Society of Santa Clara Valley since 1983, she has taught animal welfare classes, rescued animals during the Lexington fire and the Alviso flood, made guest appearances on television and radio to talk about animal needs, and baked dog biscuits to raise money for the shelter. The Humane Society presented her with their Humanitarian Award in 1985. In 1987 she started a humane cat trapping service to deal with the overpopulation of wild cats in the Santa Clara Valley. During 1988, as part time Field Investigator for United Animal Nations, she has been to the Yellowstone fire and the Alaskan Whale Rescue to gather information on the needs of animals during emergency situations. Her rescue work has also included the cleaning and care of birds following oil spills. As a member of the Santa Clara County Animal Advisory Commission, she is working with the other commissions to ensure humane treatment of animals in this county. Through all her experiences, Terri has learned that it is one thing to love animals, but often, that love has to go a step further, and that is when you have to make tougher decisions because you love animals enough to be humane.

Dr. David Shaver has been involved in research in submicrometer lithography and microstructure fabrication since 1977. While at MIT's Lincoln Laboratory he worked with x-ray and e-beam lithography, and applied the technology to fabricate

electronic devices such as submicrometer channel-length silicon MOSFET's and specialized structures such as Fresnel zone-plates used for x-ray imaging. As an outgrowth of his work in electron-beam lithography, Dr. Shaver developed electron-beam techniques for testing and repairing wafer-scale integrated circuits. In 1984 he became Chief Scientist at Micrion Corporation where he was responsible for developing focused ion-beam and laser-beam systems for applications such as photomask and microcircuit repair and modification. In 1988, he returned to Lincoln Laboratory where he is now Assistant Leader of the Submicrometer Technology Group. His current research work is principally in the area of 193-nm excimer lithography.

Dr. Shaver received his S.B., S.M., and Ph.D. from the Massachusetts Institute of Technology in 1976, 1978, and 1981, respectively.

Dr. Robert Street received his BS in physics in 1968 and his PhD in 1971 from the University of Cambridge. He was a postdoctoral scientist at the University of Sheffield in England from 1971-1974 where he conducted research on the nature of electronic defects in chalcogenide glasses. From 1974-1976, as a visiting scientist at Max Planck Institute at Stuttgart, West Germany, he studied the optical properties of III-V semiconductors and defects in glasses. In 1976 Dr. Street joined the Xerox Palo Alto Research Center and since then has been involved in research on hydrogenated amorphous silicon and defects in semiconductors. Currently Dr. Street is a Research Fellow and Manager of the Advanced Amorphous Materials Area of the Electronic Materials Laboratory, which is responsible for research and characterization of new electronic materials for Xerox technology applications.

Prof. Simon Wong received the BEE and BME degrees from the University of Minnesota at Minneapolis in 1975 and 1976 respectively, and the MS and PhD degrees from the University of California at Berkeley in 1978 and 1983 respectively. From 1978 to 1980, he was with the National Semiconductor Corporation designing MOS dynamic memories. From 1980 to 1985, he was with the Hewlett Packard Laboratories working on advanced MOS technologies. From 1985 to 1988 he was an assistant professor in Electrical Engineering at Cornell University. In 1988, he joined Stanford University as an assistant professor in Electrical Engineering. His present research interests include advanced interconnect technology, wafer scale integration, optical interconnect, and high speed digital system design.

Dr. Tadanori Yamaguchi received his BS degree in EE from Miyakonoyo Institute of Technology (Japan) in 1969. He joined SONY (Japan), where he worked on wafer processing and device characterization of high-frequency Bipolar and MOS transistors. During 1971-76, he was engaged in developing exploratory MOS devices and process technologies; namely, non-volatile memory devices and IC's (MAOS-EPROM), variable threshold-voltage MOS devices, ion implantation for MOS devices, Resistive-Gate Charge-Transfer devices, and CMOS IC technology using SIPOS film. Since 1977, he has been with Tektronix, Inc., Beaverton, Oregon, where he developed a new approach for submicrometer-channel NMOS device technology, a 1000-volt NMOS-IC technology, a 2- μ m double-layer metal CMOS-VLSI technology, and latchup-free submicrometer-channel CMOS devices using deep-trench isolation and self-aligned TiSi₂ technologies. He also worked on small-geometry MOS-device characterization and modeling. Currently, he is principal engineer at Tektronix Laboratories, and manages a Si-device Research group working on advanced high-speed bipolar and Bi-CMOS technologies. He holds seven U.S. patents and has published and presented over 50 technical papers including several invitational seminars.

1989 Ross Tucker Award Recipients

(to be announced)

SYMPOSIUM COMMITTEE

<i>Kent Carey</i>	<i>Frank Perlaki</i>
Hewlett-Packard	Hewlett-Packard
<i>David F. Kyser</i>	<i>John M. Pierce</i>
Philips Research	National
<i>James P. McVittie</i>	<i>Lynn M. Roylance</i>
Stanford University	Hewlett-Packard
<i>Aare Onton</i>	<i>Cary Yang</i>
IBM	Santa Clara University

SYMPOSIUM CHAIR

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SYMPOSIUM SUPPORT

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REGISTRATION FORM - 17th ELECTRONIC MATERIALS SYMPOSIUM (1989)

Name: _____ Title: _____

Organization: _____

Mailing Address: _____

City, State: _____ ZIP: _____

Symposium date: March 27, 1989	Registration Fee	Pre-registration by March 20, 1989
Regular Registration (please circle)	\$75	\$55
Full-Time Registered Student	\$35	\$15

Make check payable to: "Electronic Materials Symposium", and send with the above information to: Dr. Robert L. Thornton, Xerox PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304. (415) 494-4178. Do not send purchase orders. Please make sure your name and affiliation are clearly identified.