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The
NORTHERN CALIFORNIA
ELECTRONIC MATERIALS
SYMPOSIUM

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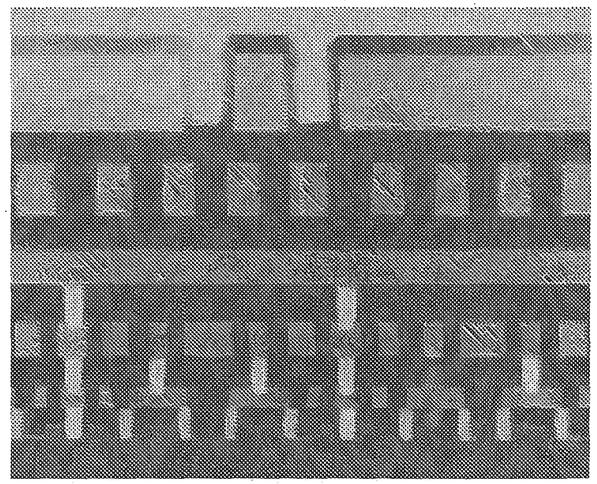

THE 26th Annual
NORTHERN CALIFORNIA

ELECTRONIC MATERIALS SYMPOSIUM

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

SUNNYVALE HILTON

1250 LAKESIDE DR.

SUNNYVALE, CALIFORNIA

Monday

March 23, 1998

8:00 AM

PROGRAM

Monday, March 23, 1998
Sunnyvale Hilton

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8:00 Registration

MORNING SESSION

Session Chair: Dr. Scott McHugo
Lawrence-Berkeley Labs, Livermore, CA

8:30 **Welcome Remarks and Introduction**
Dr. Dave Fork
Xerox, Palo Alto, CA

8:40 **"Adhesion and Reliability of Multi-Layer Thin Film Structures in Microelectronic Devices"**
Dr. Reiner H. Dauskardt
Stanford Univ., Stanford, CA

9:25 **"A Novel Magnetic Media Structure for Future Longitudinal Magnetic Recording"**
Dr. J. Kent Howard
Applied Magnetics, Goleta , CA

10:10 **REFRESHMENTS** (Vendor Exhibit Area)

10:40 **"Global 300mm Silicon Wafer Initiative"**
Dr. George Lee
SEMI, Mountain View, CA

11:30 **LUNCHEON**

12:15 **The twenty-fourth annual Ross Tucker Award**

12:25 **"Trends in Integrated Electronic Technology II"**
Dr. Gordon Moore
Intel, Santa Clara, CA

AFTERNOON SESSION

Session Chair: Dr. Shekhar Pramanick
AMD, Sunnyvale, CA

1:30 **"Combinatorial Materials Synthesis"**
Dr. Peter Schultz
UCB/LBL, Livermore, CA

2:15 **"Technical & Business Challenges in Commercializing MEMS"**
Dr. Eric Peeters
Xerox, Palo Alto, CA

3:00 **REFRESHMENTS** (Vendor Exhibit Area)

3:30 **"Interconnect Technology for the Next 13 Years"**
Dr. Kenneth A. Monnig
Sematech, Austin, TX

4:15 **"Organic LEDs: the new Emissive Display?"**
Dr. Ron Moon
HP, Palo Alto, CA

5:00 **HOSTED COCKTAIL PARTY**
(Vendor Exhibit Area)

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VENDOR'S SHOW

8:00-5:00 Vendors Exhibits

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General Information

The Symposium registration 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 the attendance to be limited to 400 registrants.

Costs of the Symposium have been kept to a minimum to encourage attendance. A discounted registration fee is available until March 16, 1998, because of the lower cost of handling preregistration and early arrangement commitments. To reserve your place in the Symposium and in the luncheon, we urge you to register early by mail, using the attached form. All registration is transferable but not refundable.

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

The Symposium features a Vendor's exhibit. Information and displays of new materials, processing equipment, and analytical instruments will be presented by representatives of 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 8:30AM. Registration begins at 8:00AM. The vendors area will be available for setup at 7:00AM.

Further questions regarding the Symposium should be directed to Dr. David Fork, Xerox Palo Alto Research Center. Phone: 650-812-4121, email: fork@parc.xerox.com.

The Electronic Materials Symposium Committee exists to promote the understanding of electronic materials within the industrial and academic communities of the San Francisco Bay area. This committee organizes the annual Electronic Materials Symposium, featuring presentations on advanced electronic, magnetic and optical materials processing, characterization and devices by outstanding speakers who have made significant contributions to their fields. Proceeds of the symposium are used to support electronic materials research and education in local universities.

ABOUT THE COVER

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
This is a cross sectional SEM micrograph of the Pentium(R) II processor core die containing 7.5M transistors, 5 layers of metal, and using 0.35micron technology.
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ABOUT THE SPEAKERS

Reiner H. Dauskardt joined the Department of Materials Science and Engineering, Stanford University in 1994 where he is an Associate Professor. He completed his Ph.D. at UC Berkeley in combination with the University of Witwatersrand, South Africa. His interests are in structure-property relationships in a range of advanced material systems. His activities have concentrated on the micro-mechanisms of fracture and subcritical crack-growth in metals, ceramics, polymers, their composites and a number of bi-material interface systems. Dr. Dauskardt is known for his research on cyclic fatigue in ceramics for which received the U. S. Department of Energy Most Outstanding Scientific Accomplishment Award in Ceramics and Metallurgy in 1989. Recently, he has studied the fundamental mechanisms that determine the adhesion and reliability of interfaces in microelectronic devices and their packages. His work includes a range of collaborative efforts with local microelectronic and biomedical companies, and with other researchers in academia and government laboratories.

J. Kent Howard has joined Applied Magnetics Corporation of Goleta, CA where he is Director of Materials Sciences and is responsible for materials related work on MR (magnetoresistive) and GMR (giant magnetoresistive) sensors. Prior to joining Applied Magnetics, he managed the advanced media research program for Komag Inc. in San Jose CA for under one year. He retired from IBM in early 1997 after 31 years. He was appointed an IBM Fellow in 1990 for inventions in the interconnect metallurgy field for integrated circuit devices (IBM bipolar technology) and for research on magnetoresistive heads and sputtered thin film disks for IBM storage devices. Recently, his research has focused on materials research on read sensors using the giant magnetoresistive effect and on film disk media for the 21st century.

George Lee is SEMI's Global 300 mm Initiative Director. Previously he was founder and CEO of Strata Systems Inc., a software and systems development company. Prior to Strata Systems he served for thirteen years as CEO of a semiconductor equipment manufacturer. He has founded and co-founded laser and electro-optic systems manufacturing companies and held positions in sales, marketing and general management with major technology companies. He holds a degree in international economics with graduate course work in strategic marketing, corporate development and international business strategy. His military experience included Naval guided missile training and tactics.

Dr. Kenneth A. Monnig started his career at Hewlett-Packard where he designed and implemented processes, process flows and equipment for tungsten interconnect systems in 1980, 3-5 years ahead of the industry. He subsequently started Genus Inc as a technical director responsible for the creation of their first generation CVD tungsten silicide product. He joined SEMATECH at its start in 1988. There he has initiated projects in chemical-mechanical polishing, tungsten CVD, collimated PVD Ti/TiN and CVD Ti/TiN tool development and manufacturing improvement programs. He is currently is Program Manager for advanced interconnects at Sematech leading project teams encompassing; Cu interconnects, and low epsilon dielectrics. He is also responsible for interconnect area "capital productivity" activities for the .25μm and .18μm tool sets. Dr. Monnig was awarded patents for his work at Hewlett-Packard and Genus.

Dr. Ron Moon is the manager of the Solid State Materials Department in Hewlett-Packard Labs. He also held positions in the R&D departments at HP's Optical Communications and Optoelectronics divisions, Varian's Central research Lab, and at Imperial College, London. He received his Ph.D. from UC Berkeley in Engineering Science. His research has led to the demonstration of the InGaAsP quaternary alloys for optical communications, to the use of concentrated sun light and multi-bandgap layers for efficient solar cells, and to highly efficient transparent GaAs photocathodes for night vision. He has participated in developing LPE and OMVPE materials growth technologies. Today, the Solid State Materials Department conducts research on III-V materials for optical and electronic devices, complex oxides for memory applications, organic LEDs for displays, and materials characterization for Hewlett-Packard.

Dr. Gordon E. Moore is Chairman Emeritus of Intel Corp. Moore co-founded Intel in 1968, serving initially as Executive Vice President. He became President and CEO in 1975 and held that post until elected chairman and Chief Executive Officer in 1979. He remained CEO until 1987. Moore earned a B.S. in Chemistry from the University of California at Berkeley and a Ph.D. in Chemistry and Physics from the CalTech. He was born in San Francisco on Jan. 3, 1929. He is a director of Varian Associates, Gilead Sciences Inc. and Transamerica Corp. He is a member of the National Academy of Engineering, a Fellow of the IEEE and a Chairman of the Board of Trustees of the California Institute of Technology. He received the National Medal of Technology in 1990.

Dr. Eric Peeters is a Member of Research Staff at the Xerox Palo Alto Research Center (PARC). In the PARC Electronics Materials Laboratory (EML), he is responsible for developing Micro Electro Mechanical Systems (MEMS) technology for application in commercial document output products. Dr. Peeters has authored over 40 publications in the areas of silicon micromachining technology, electromechanical design of micromachined devices, MEMS computer aided design (CAD), mechanical sensors, sensor interfacing and biomedical applications. Dr. Peeters received the PhD degree in Electrical Engineering from the Katholieke Universiteit Leuven, Belgium, in 1994 for work on "Process development for three-dimensional silicon microstructures, with application to mechanical sensing devices.

Dr. Peter G. Schultz graduated summa cum laude in 1979 from the California Institute of Technology. He received his doctorate from Caltech in 1984 with Professor Peter Dervan. His thesis covered both the thermal and photochemistry of the reactive intermediate, the 1,1-diazene, as well as the design and characterization of sequence-selective DNA cleaving molecules. Schultz was first to demonstrate that synthetic molecules could be designed that are capable of cleaving plasmid DNAs at unique sites, a first step toward generating artificial restriction enzymes. This work led to a new method, termed affinity cleaving, for characterizing small molecule-DNA interactions. He spent a year at MIT with Professor Christopher Walsh carrying out site-directed mutagenesis experiments to probe the mechanism of the enzyme mercuric ion reductase. Schultz joined the faculty of the UC Berkeley in 1985 where he is a Professor of Chemistry. Most recently, he has extended ideas first applied in antibody work to materials science. He has developed a new technology for parallel synthesis, processing and screening of large libraries of solid state inorganic and organic materials and even devices (electronic, magnetic, optical and catalytic) for new properties.

The Twenty-Fourth Annual

Ross Tucker Award Recipients

Robert J. Gleixner
Department of Materials Science and Engineering
Stanford University
Thesis Title: "Modeling stress evolution and void formation in microelectronic interconnect lines"

Timothy J. Brosnihan
Department of Electrical Eng. and Computer Science
University of California, Berkeley
Thesis Title: "A fabrication process for fully integrated, high-aspect-ratio SOI based MEMS devices"

Symposium Committee

Emily Allen (SJSU)	*Judy Glazer (HP)*	*Shekhar Pramanick (AMD)*
Maximilian Biberger (Novellus)	*Scott McHugo (LBL)*	*FernandoPonce (Xerox)*
Melisa Buie (Appl. Materials)	*Bill Imler (HP)*	*Irfan Saadat (National)*
Larry Comstock (SJSU)	*Bob Miller (IBM)*	*Rick Schneider (HP)*

Symposium Chair

Dave Fork
Xerox, Palo Alto, CA

Symposium Sponsors

Northern California Section of TMS

IEEE Electron Device Society, Santa Clara Valley Chapter

REGISTRATION FORM - 26TH ANNUAL ELECTRONIC MATERIALS SYMPOSIUM (1998)

Name: _____ Title: _____

Org.: _____ M/S: _____

Mailing Add.: _____ City, St., Zip: _____

Symposium Date: March 23, 1998	Registration Fee	Pre-registration by March 16, 1998
Regular Registration (please circle)	$85	$70
Full-Time Registered Student	$35	$25

Make checks payable to: Electronics Materials Symposium and send along with the above information to: EMS, c/o Dr. Emily Allen, SJSU, Dept. of Materials Engineering, One Washington Sq., San Jose, CA 95192-0086. Any questions should be directed to Prof. Allen at (408) 924-4010 or email: elallen@email.sjsu.edu. Do not send purchase orders. The Tax ID for the Symposium is: 25-1484913. Please make sure your name and affiliation are clearly identified. Cancellation: Registration may be transferred/substituted but are non-refundable. No confirmation of