

THE
NORTHERN CALIFORNIA
METALLURGICAL SECTION
of
AIME
PRESENTS
THE SECOND ANNUAL
ELECTRONIC MATERIALS SYMPOSIUM

A one day symposium on electronic materials featuring seven outstanding authorities in their respective fields.

CABAÑA HYATT HOUSE
4290 EL CAMINO REAL
PALO ALTO, CALIFORNIA 94306

THURSDAY
MARCH 21, 1974

7:30 A.M.

PROGRAM

Thursday, March 21, 1974
Cabana Hyatt House - Maximus Central

7:30 Registration

MORNING SESSION

Session Chairman: Dr. Eugene S. Meieran
Intel Corporation
Santa Clara, California

9:00 Welcoming Remarks and Introduction
Asst. Prof. Lee F. Donaghey
University of California, Berkeley
Northern California Metallurgical
Section of AIME

9:15 "Trends in Integrated Electronic Technology"
(or "Where Is This Silly Business Going Anyway?")
Dr. Gordon Moore
Intel Corporation
Santa Clara, California

10:00 COFFEE BREAK

10:30 "The Crunch in Photolithography"
Mr. Don R. Harriott
Bell Telephone Laboratories
Murray Hill, New Jersey

11:15 "Electron Beam Microfabrication"
Dr. Edward D. Wolf
Hughes Research Laboratories
Malibu, California

12:00 LUNCHEON

12:45 Introduction
Prof. Gerald Pearson
Stanford University
Stanford, California

"Personal Perspectives on Spacecraft Earth"
Apollo 15 Astronaut, Colonel Al W. Worden
Ames Research Center
Moffett Field, California

AFTERNOON SESSION

Session Chairman: Dr. Robert A. Burmeister
Hewlett-Packard Laboratories
Palo Alto, California

1:45 "Ion Implantation"
Prof. Jim F. Gibbons
Stanford University
Stanford, California

2:30 "Processing of Heterojunction Devices"
Mr. Jerry M. Woodall
IBM Research Center
San Jose, California

3:15 COFFEE BREAK

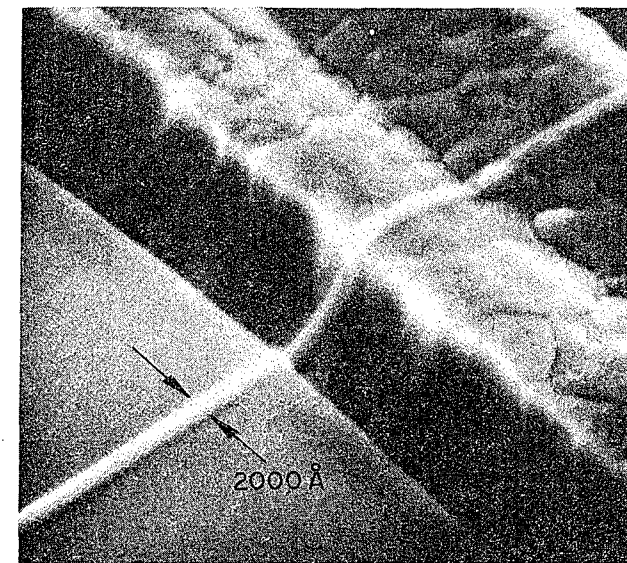
3:45 "Vapor Phase Epitaxy"
Dr. Don W. Shaw
Texas Instruments
Dallas, Texas

4:30 "The Growth and Properties of Heteroepitaxial Silicon"
Dr. Glenn W. Cullen
RCA Laboratories
Princeton, New Jersey

5:15 HOSTED COCKTAIL PARTY

Cabana Hyatt House - Maximus South

9:00 A.M. - 5:00 P.M. - Vendors Session

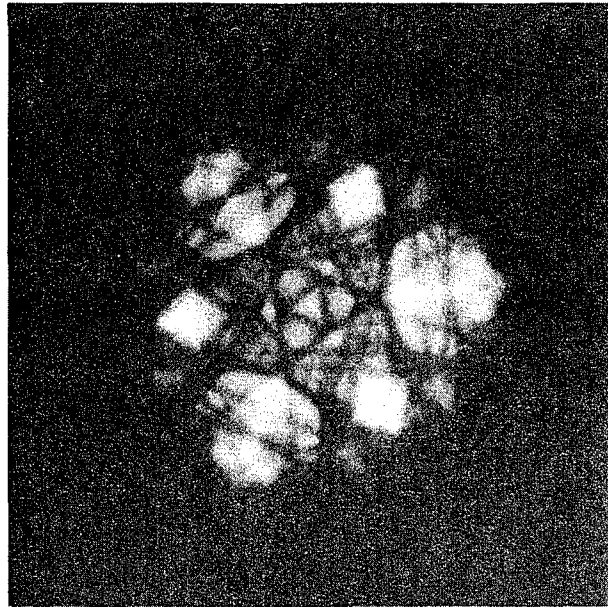
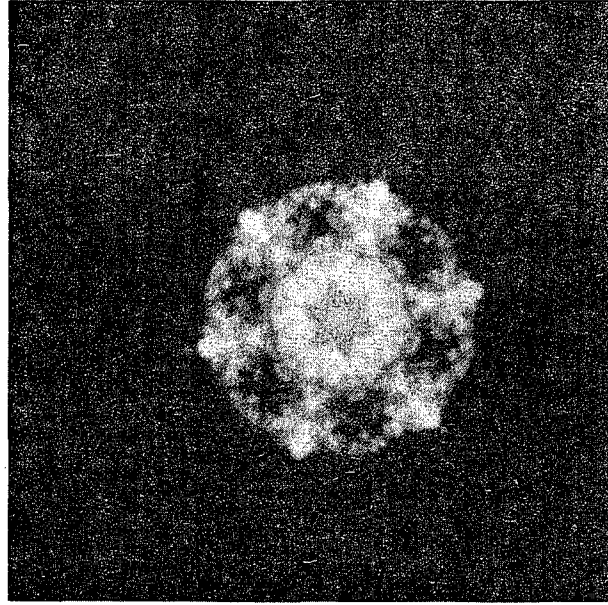
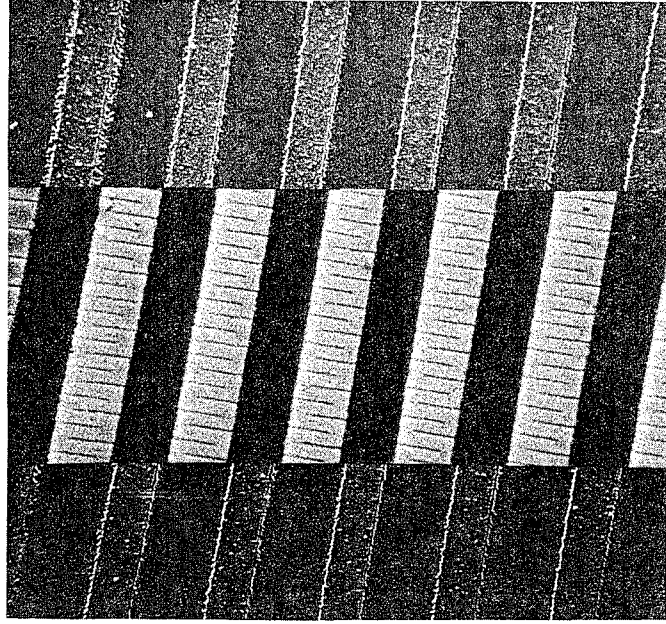


GENERAL INFORMATION

1. The registration fee for the symposium covers admission to symposium sessions, extended abstracts of symposium presentations, luncheon, a vendors exhibit, and a portion of the 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 Friday, March 15, 1974 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 refunds of registration fees will be made after Friday, March 15, 1974.
3. We are honored to have Col. A. M. Worden of AMES Research Center, the Apollo 15 Command Module Pilot, as our luncheon speaker. He will speak on "Personal Perspectives on Spacecraft Earth."
4. A new feature of this symposium will be a vendors exhibit. Informational displays on new materials and processing equipment will be presented by manufacturing representatives.
5. A hosted cocktail party will follow the final symposium presentation, providing an opportunity for informal discussion with symposium speakers and guests.
6. Registration material and extended abstracts of the symposium presentations will be available at the symposium. The opening session will begin promptly at 9:00 a.m.
7. Further questions regarding the symposium should be directed to:

Dr. Lee F. Donaghey
Dept. of Chemical Eng.
University of California
Berkeley, Ca. 94720
(415) 642-2408

Dr. K. S. Sree Harsha
215 Engineering Building
San Jose State University
San Jose, Ca. 95192
(408) 277-2446



ABOUT THE SPEAKERS

DR. GLENN W. CULLEN received his training as an inorganic chemist at the Universities of Cincinnati and Illinois. Since joining the RCA Laboratories in 1958, he has worked in the areas of passivation of semiconducting surfaces, the preparation of superconductors, and preparation and characterization of heteroepitaxial thin films of various electronically active materials. Dr. Cullen is the Head of the Materials Applied Synthesis Group at the RCA Laboratories. He currently serves as an Associate Editor of the Journal of Crystal Growth.

PROF. JIM F. GIBBONS received his Ph.D. degree from Stanford University in 1956 in Electrical Engineering. He joined the teaching staff of Stanford University in 1957. Since then he has published four books, written over fifty technical articles, and holds six patents. Currently he is working on ion implantation and proton enhanced diffusion in solids, and is actively engaged in educational planning. He is a Fellow of the IEEE and was awarded the Western Electric Fund Award for excellence in teaching.

MR. DON R. HARRIOTT received his training in Optics at the University of Rochester, and in Electrical Engineering at the Polytechnical Institute in Brooklyn. He worked on optical instrumentation and interferometry at Bausch and Lomb Optical Co., and joined Bell Telephone Laboratories Research Department in 1956 as a consultant in optics. In conjunction with Drs. Gavan and Bennett he constructed the first gas laser. He has worked on laser applications and optical systems for mask fabrication. Currently he is a Department Head, responsible for the use of electron beams and x-rays for photoresist exposure for integrated circuit devices.

DR. GORDON MOORE received his doctoral degree in Chemistry and Physics from the California Institute of Technology. He then took a position in the Applied Physics Laboratories at John Hopkins, and subsequently joined Shockley Transistor Laboratories in Palo Alto, California. Dr. Moore was one of the founders of Fairchild Semiconductor in 1957, and assumed the position of Director of Research and Development in 1959. In 1968, he participated in the founding of Intel Corporation, where he now holds the position of Executive Vice President. Dr. Moore is the author of numerous technical publications and is a holder of some of the original patents that have led to the vast growth of the semiconductor industry.

DR. DON W. SHAW is a Senior Scientist in the Physical Science Laboratories at Texas Instruments. He joined Texas Instruments in 1965 shortly after receiving his Ph.D. degree. Since that time he has been responsible for development of semiconductor materials for microwave applications and has engaged in research into the fundamental mechanisms of epitaxial growth by chemical vapor deposition.

DR. EDWARD D. WOLF received his Ph.D. degree in Physical Chemistry from Iowa State University in 1961. He did postdoctoral studies at Princeton University during 1961 and 1962. He was a Member of the Technical Staff at the North American Aviation (now Rockwell International) Science Center, and joined Hughes Research Laboratories in 1965 to work on the physical electronics of surfaces. He is currently Section Head, Electron Beam Surface Physics, investigating electron-beam interactions on solid surfaces and is responsible for developing new high-resolution electron-beam techniques for diagnostics and computer-controlled microfabrication of devices and circuits.

MR. JERRY M. WOODALL received his B.S. degree in Metallurgy from the Massachusetts Institute of Technology in 1960 and joined the IBM Research Division in 1962, prior to which he was associated with the Clevite Corporation. Mr. Woodall has been active in the Electrochemical Society, both as a Divisional Editor (Semiconductors) and as Secretary-Treasurer and Chairman of the Electronics Division. He has authored twenty-six publications in the field of crystal growth and device fabrication and has thirteen filed or issued U.S. patents in these areas. His work includes the fabrication of the first amphoterically doped GaAs:Si high efficiency infrared emitting diodes, and the (Ga,Al) As-GaAs solar cell. Mr. Woodall is currently Manager of Exploratory Devices at the IBM Research Laboratory at San Jose, California.

COLONEL AL W. WORDEN received his undergraduate training at the United States Military Academy at West Point, and his M.S. in Astronautics and Aeronautical Engineering, and in Instrumentation Engineering from the University of Michigan in 1963. He was awarded an Honorary Doctorate in Astronautical Science by the University of Michigan in 1971. Colonel Worden was the Command Module Pilot for the Apollo 15 Lunar Voyage, and spent July 26, 1971 to August 7, 1971 in space. Colonel Worden is the recipient of numerous medals and awards, including the NASA Distinguished Service Medal, the Air Force Distinguished Service Medal, the United Nations Peace Medal, the Kitty Hawk Award, and the Belgium Order of Leopold. Colonel Worden presently holds the position of Chief of Systems Studies Division at NASA Ames Research Center.

REGISTRATION FORM

1974 Second Annual AIME Electronic Materials Symposium

Name _____ Title _____
 Organization _____
 Mailing Address _____
 City _____ State _____ Zip Code _____

Registration Fee:

	Before March 15, 1974	After March 15, 1974
() AIME Member	\$40.00 (2:50)	\$15.00 (20)
() Non-member	\$15.00 (17:50)	\$20.00 (25)
() Full-time Student	\$ 5.00	\$10.00

Make checks payable to: "N. Cal. Met. Section, AIME," and send with the above information to: Dr. K. S. Sree Harsha, 215 Engineering Building, San Jose State University, San Jose, California 95192. Do not send Purchase Orders. Others may register by supplying the information requested above and sending it with the registration fee.

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