THE MATERIALS RESEARCH SOCIETY

1980 Annual Meeting

November 16-20
Copley Plaza Hotel
Boston, Massachusetts

PRELIMINARY PROGRAM & REGISTRATION INFORMATION
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**Registration Form** ............................................. Centerfold
1. **Schedule.** The Activities Locator appears as the centerfold. It indicates time periods and places for all the symposia and meeting events.

2. **Registration.** The Registration Form is part of the centerfold. Advance registration is encouraged by a discount rate, and it will speed you through the registration process. Registration will take place in the hotel lobby on Sunday evening from 6:00 to 10:00, and daily thereafter from 8:00 a.m. to 5:00 p.m.

   **Attendees of the Symposium on Nuclear Waste Management must be registered for Symposium D. The registration fee for this symposium, which includes a copy of the proceedings to be published in 1981, is:**

   - Member $95; Non-member $110; or Student $40.

3. **MRS Membership.** If you join the Society or renew your membership now, you can register for this meeting at a reduced rate (see Registration Form in centerfold).

4. **Room Accommodation.** The host hotel, the Copley Plaza (800/225-7654), has reserved a block of rooms for meeting attendees (see reservation card attached). The Boston Park Plaza (617/426-2000), a block away, will accommodate overflow registrants. These rooms will be held up to one month prior to the conference, after which requests will be handled on a space available basis. When making reservations by phone, be sure to ask for rooms held for Materials Research Society meeting.

   Other hotels in the area include: Colonnade Hotel (617/261-2800) and Copley Square Hotel and Motor Inn (617/536-9000).

5. **Proceedings.** Symposia A, B, D, and J intend to publish their proceedings individually. Persons interested in purchasing proceedings of Symposium A, B and J should contact the respective symposium chairperson(s). **Proceedings of Symposium D will be available at a special conference rate only to those registering for that symposium (see item 2 above).**

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**1980 ANNUAL MEETING**  
**PROGRAM CO-CHAIRMEN**  
C. J. Northrup, Sandia Laboratories  
K. N. Tu, IBM
SYMPOSIUM A
LASER AND ELECTRON-BEAM SOLID INTERACTIONS AND MATERIALS PROCESSING
Chairmen: J. F. Gibbons, L. D. Hess and T. W. Siemc
November 17-19, 1980

SESSION A-1
FUNDAMENTAL MECHANISMS
Chairman: C. W. White, Oak Ridge National Laboratory
Organizer: G. L. Olson, Hughes Research Laboratories
Monday, November 17, 1980

In.
8:30— Fundamental Mechanisms In Laser And Electron Beam Processing of Materials, W. L. Brown, Bell Laboratories, Murray Hill, NJ 07974

1.1 8:55— Pulsed Raman Temperature Measurements Of Laser-Heated Crystalline Silicon, A. Compaan and H. W. Lo, Department of Physics, Kansas State University, Manhattan, KS 66506

1.2 9:10— Computer Model Of The Temperature Rise and Carrier Concentration Induced In Si By Nanosecond Laser Pulses, A. Lietoila and J. F. Gibbons, Stanford Electronics Laboratories, Stanford, CA 94305

1.3 9:25— Threshold Energy Density For Pulsed Laser Annealing Of Silicon, D. Hoonhout and F. W. Saris, FOM-Institute for Atomic and Molecular Physics, Kruislaan 407, 1098 SJ Amsterdam, The Netherlands


10:10— BREAK

In.


1.7 11:05— Dependence Of Trapping And Segregation Of Impurities In Si On The Velocity Of The Liquid-Solid Interface, P. Baeri, G. Forti and J. M. Poate, Bell Labora-

In. Invited paper 2

1.9 11:35—Optical Measurement Of Phase Boundary Dynamics During Laser Crystallization Of Amorphous Ge Films, R. L. Chapman, John C. C. Fan, H. J. Zeiger and R. P. Gale, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA 02173


12:05—LUNCH

SESSION A-2
ELEMENTAL SEMICONDUCTORS

Chairman: S. U. Campisano, Universita di Catania
Organizer: S. S. Lau, University of California, San Diego

In. 1:45—Laser And Electron Beam Interactions In Elemental Semiconductors, K. Gamo, Faculty of Engineering Science, Osaka University, Toyonaka, Osaka, Japan

2.1 2:10—A LEED Investigation of (111) Oriented Si, Ge And GaAs Surfaces Following Pulsed Laser Irradiation, D. M. Zeher, J. R. Noonan, H. L. Davis, C. W. White and G. W. Ownby, Solid State Division, Oak Ridge National Laboratory, Oak Ridge, TN 37830

2.2 2:25—Adsorption Of Oxygen In Laser-Induced Amorphous Silicon, Y. S. Liu, S. W. Chiang and F. Bacon, General Electric Research and Development Center, Schenectady, NY 12301

2.3 2:40—Direct Measurement Of CW Laser-Induced Crystal Growth Dynamics By Time Resolved Optical Reflectivity, G. L. Olson, S. A. Kokorowski, R. A. McFarlane and L. D. Hess, Hughes Research Laboratories, Malibu, CA 90265


2.6 3:25—A Simple Optical Pyrometer For In Situ Temperature Measurement During CW Argon Laser Annealing, T. O. Sedgwick, IBM T. J. Watson Research Center, Yorktown Heights, NY 10598

3:40—BREAK

2.7 3:55—EBIC Investigation Of Defects Induced In Beam-Annealed Si, N. H. Sheng, M. Mizuta, and J. L. Merz, University of California, Santa Barbara, CA 93106

In, Invited paper
2.8 4:10—Infrared Optical Properties Of Ion Implanted And Laser Annealed Silicon, M. Miyao, T. Motooka, N. Natsuaki and T. Tokuyama, Central Research Laboratory, Hitachi Ltd., Kokubunji, Tokyo, Japan


2.10 4:40—Heterogeneous Nucleation Of Spatially Coherent Damage Structures In Crystalline Silicon With Picosecond 1.06µm And 0.53µm Laser Pulses, R. M. Walser, M. F. Becker, J. G. Ambrose, and D. Y. Sheng, Electronics Research Center, University of Texas at Austin, Austin, TX 78712

2.11 4:55—Defect-Induced Photoluminescence From Laser Annealed Si, M. S. Skolnick, A. G. Cullis, and H. C. Webber, Royal Signals And Radar Establishment, St. Andrews Road, Malvern, Worcs., U.K.

2.12 5:10—Microscopy Of CW Laser Annealed Silicon, G. A. Rozgonyi, H. Baumgart, Max-Planck-Institut fur Festkörperforschung, Heisenbergstr. 1, 7000 Stuttgart 80, FRG, F. Philipp, U. Goelse, Max-Planck-Institut fur Metallforschung, 7000 Stuttgart 80, FRG


5:40—Refreshments, Discussion of Figures and Late News Papers

SESSION A-3
COMPOUND SEMICONDUCTORS
Chairman: C. L. Anderson, Hughes Research Laboratories
Organizer: J. L. Merz, University of California, Santa Barbara

Tuesday, November 18, 1980

In.
8:30—Laser And Furnace Annealing Of Implanted Gallium Arsenide, J. S. Williams, Department of Communication and Electronic Engineering, Royal Melbourne Institute of Technology Limited, Melbourne, Australia

3.1 8:55—Pulsed Ruby Laser Annealing Of Zn, Mg And Se Ion Implants In Semiconducting GaAs, D. H. Lowndes, R. D. Westbrook, and J. W. Cleland, Solid State Division, and W. H. Christie, Analytical Chemistry Division, Oak Ridge National Laboratory, Oak Ridge, TN 37830


In, Invited paper
3.3 9:25—Behavior Of Metastable Te Donor Concentrations In Q-Switched Ruby Laser Annealed GaAs, P. Pianetta, J. Amano, G. Woolhouse and C. A. Stolle, Solid State Laboratory, Hewlett-Packard Laboratories, 1501 Page Mill Road, Palo Alto, CA 94304

3.4 9:40—Pulse Diffused n+ Layers In GaAs, D. E. Davies, E. F. Kennedy, T. G. Ryan and J. P. Lorenzo, Rome Air Development Command, Hanscom AFB, Bedford, MA 01731

3.5 9:55—Laser Annealing Of Defects In VPE And Cz GaAs With A Pulsed Nd:YAG Laser, P. M. Mooney, J. C. Bourgoin, Groupe de Physique des Solides de l’E.N.S., Université Paris VII, Tour 23, 2 place Jussieu, 75221 Paris Cedex 05, France, J. Icône, Laboratoire Central de Recherche, Domaine de Corbeville, D.T. 10, 91401 Orsay, France

10:10—BREAK

In.

10:25—Laser Processing Of Compound Semiconductors, J. C. C. Fan, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA 02173

3.6 10:50—CW Laser Annealing Of Low Dose Si Implants In GaAs, Y. I. Nissim and J. F. Gibbons, Stanford Electronics Laboratories, Stanford, CA 94305

3.7 11:05—Liquid Phase Recrystallization Of InSb By CW Laser Irradiation, D. H. Lee, Santa Barbara Research Center, Goleta, CA 93017; G. L. Olson and L. D. Hess, Hughes Research Laboratories, Malibu, CA 90265

3.8 11:20—Laser-Annealed GaP Ohmic Contacts For High-Temperature Devices, O. Eknayan, W. Van der Hoeven, T. Richardson and W. A. Porter, Institute for Solid State Electronics, Texas A & M University, College Station, TX 77843

3.9 11:35—Device Performance Of Laser-Annealed Double Heterostructure GaAlAs Materials, J. A. Rostworowski, M. Brett, and R. R. Parsons, Dept. of Physics, University of British Columbia, Vancouver, B.C. V6T1W5, Canada; and A. J. Springthorpe, C. M. Look, and J. C. Dyment, Bell-Northern Research, Ottawa, Canada

3.10 11:50—Optimization Of Pulsed Annealing Techniques For GaAs Integrated Circuits, G. M. Martin, A. Mitonneau, M. Cathelin, S. Makram-Ebeid and C. Venger, Laboratoires d’Electronique et de Physique Appliquée, 3 avenue Descartes, 94450 Limeil Brevannes, France; D. Barbier and A. Laugier, L.P.M. Laboratory, INSA, 20 avenue Albert Einstein, 69621 Villeurbanne, France

12:05—LUNCH

SESSION A-4
DEVICE APPLICATION

Chairman: T. Tokayama, Hitachi Ltd., Tokyo
Organizer: P. Pianetta, Hewlett-Packard Laboratories

In.


*Currently at National Semiconductor, Santa Clara, CA 95051

4.2  2:25—Characterization Of Al-Si Ohmic Contacts Obtained On Shallow Junctions By Laser And Electron Beam Annealing, A. Armigliato, R. De Luca, M. Finetti and S. Solmi, CNR-Instituto Lami, Via Castagnoli, 1 40126 Bologna (Italia)

4.3  2:40—CW Argon Ion Laser Annealed B And As Implanted Diodes In Oxide Defined Si Devices, T. O. Sedgwick, P. M. Solomon and H. J. Vollmer, IBM T. J. Watson Research Center, Yorktown Heights, NY 10598


4.5  3:10—C-V And Capacitance Transient Analysis Of Self-Implanted Amorphous Si Layers Regrown By Swept Line Electron Beam Annealing, K. J. Soda, R. M. De Jule, and B. G. Streetman, Coordinated Science Laboratory and Department of Electrical Engineering, University of Illinois at Urbana-Champaign

3:25—BREAK

In.  3:40—Beam Processing In Silicon Device Technology, C. Hill, Plessey Research (Caswell) Limited, Allen Clark Research Centre, Caswell, Towcester, Northants., England

4.6  4:05—Silicon Bipolar Transistors Fabricated By Using Ion Implantation and Laser Annealing, N. Natsuki, T. Miyazaki, M. Ohkura, T. Nakamura, M. Tamura, and T. Tokuyama, Central Research Laboratory, Hitachi Ltd., Kokubunji, Tokyo 185, Japan


4.9  4:50—Effects Of Pulsed Laser Irradiation On Thermal Oxides Of Silicon, D. L. Croswait, R. R. Shah, and G. A. Brown, Semiconductor Research and Development Laboratory, Texas Instruments, Inc., P.O. Box 225012, Dallas, TX 75265

4.10 5:05—Formation Of SiC, Si3N4 and SiO2 By Ion Implantation And Laser Annealing, S. W. Chiang, Y. S. Liu and R. F. Rehl; General Electric Research and Development Center, Schenectady, NY 12301

5:20—VON HIPPEL AWARD

7:30—Snacks and Refreshments, Discussion of Presented Figures and Late News Papers
SESSION A-5
DEPOSITED FILMS AND SILICON ON INSULATORS
Chairman: H. J. Leamy, Bell Laboratories
Organizer: J. C. Bean, Bell Laboratories
Wednesday, November 19, 1980

8:30—Laser-Induced Solid-Phase Epitaxy Of Silicon Deposited Films, J. A. Roth, Hughes Research Laboratories, Malibu, CA 90265


5.3 9:25— Laser Induced Controlled Nucleation And Growth Process For Large Grained Polycrystalline Silicon, S. C. Danforth, J. S. Haggerty, F. Van Gieson, I. Kohatsu, Energy Laboratory and Department of Materials Science and Engineering, Massachusetts Institute of Technology, Room 12-063, Cambridge, MA 02139

*IBM Thomas J. Watson Research Center, Yorktown Heights, NY 10598
**IBM Systems Products Division, East Fishkill, NY 12533
***Laboratory for Plasma Studies, Cornell University, Ithaca, NY 14853

9:55— BREAK

10:10— Beam-Recrystallized Polysilicon As A Device-Worthy Material, J. F. Gibbons, Stanford Electronics Laboratories, Stanford, CA 94305

5.5 10:35— Processing And Properties Of CW Laser-Recrystallized Silicon Films On Amorphous Substrates, N. M. Johnson, D. K. Biegeisen, D. J. Bartelink, M. D. Moyer, and H. Singh, Xerox Palo Alto Research Center, Palo Alto, CA 94304

5.6 10:50— Pulsed Laser Recrystallization Of Polysilicon: Analysis Via A Novel SEM Technique, R. R. Shah and D. Loyd Crosthwait, Semiconductor Research and Development Laboratory, Texas Instruments, Inc., P. O. Box 225912, Dallas, TX 75265

5.7 11:05— Characterization Techniques For Laser-Annealed Polysilicon On Insulating Layers, J. T. Schott, Sperry Research Center, 100 North Road, Sudbury, MA 01776

5.8 11:20— Laser-Induced Crystal Growth Of Silicon Islands On Amorphous Substrates, D. K. Biegeisen, N. M. Johnson, D. J. Bartelink, and M. D. Moyer, Xerox Palo Alto Research Center, Palo Alto, CA 94304


In, Invited paper
5.10 11:50—Thermally-Assisted Pulsed-Laser Annealing Of SOS, M. Yamada, K. Yamazaki, H. Kotani, K. Yamamoto and K. Abe, Department of Electronics, Faculty of Engineering, Kobe University, Rokkodai, Nada, Kobe 657, Japan

12:05—LUNCH

SESSION A-6
SILICIDES AND METALS

Chairman: J. M. Poate, Bell Laboratories
Organizer: R. B. Gold, Stanford Electronics Laboratory

In.

1:45—Silicide Formation Using Laser And Electron Beams, T. W. Sigmon, Stanford Electronics Laboratories, Stanford, CA 94305

6.1 2:10—Laser Annealing Of The Double-Hetero Si(111)/CoS2/Si Structure, H. Ishiwhara, S. Saitoh, K. Mitsui and S. Furukawa, Tokyo Institute of Technology, 4259 Nagatsuda, Midori, Yokohama 227, Japan

6.2 2:25—Post-Irradiation Annealing Of Laser-Formed Silicide Layers, M. Wittmer, Brown Boveri Research Center, CH-5405 Baden, Switzerland, and M. von Allmen, Institute of Applied Physics, University of Bern, CH-3012 Bern, Switzerland

6.3 2:40—Formation Of Polycide With CW Laser Annealing, J. D. Pang, L. J. Palkuti, Advanced Research and Applications Corporation, Sunnyvale, California; Clark Beck, Synertek, Santa Clara, CA

2:55—BREAK

In.

3:10—Beam Induced Reactions In Metal-Film Systems, S. S. Lau, Department of Electrical Engineering and Computer Science, University of California, San Diego, La Jolla, CA 92033; Martti Maenpaa, Electrical Engineering Department, California Institute of Technology, Pasadena, CA 91125, and J. W. Mayer, Department of Materials Science, Bard Hall, Cornell University, Ithaca, NY 14853

6.4 3:35—Laser Quenched Metal-Silicon Alloys: V-Si And Nb-Si, M. von Allmen, Institute of Applied Physics, University of Bern, CH-3012 Bern, Switzerland, and M. Wittmer, Brown Boveri Research Center, CH-5405 Baden, Switzerland

6.5 3:50—Pulsed Laser Annealing Of Aluminum, P. S. Peercy, D. M. Follstaedt, and W. R. Wampler, Sandia National Laboratories, Albuquerque, NM 87185 USA


In. Invited paper
6.9 4:50—Laser Pulse Melting And Allotropy, L. Buane+, E. N. Kaufmann+ and C. W. Draper*, Bell Laboratories, Murray Hill, NJ 07974. *Western Electric Engineering Research Center, Princeton, NJ 08540

6.10 5:05—Laser Mixing Of Ni-Au Surface Films Using Q Switched Ruby Pulses, P. P. Pronko, H. Wiedersich, A. L. Helling, T. A. Lograsso, and P. M. Baldo, Materials Science Division, Argonne National Laboratory, Argonne, IL 60439


5:35—Refreshments, Discussion of Presented Figures, and Late News Papers.

SYMPOSIUM B
DEFECTS IN SEMICONDUCTORS
Co-Chairmen: J. Narayan, SSD/ORNL
T. Y. Tan, IBM
November 18-20, 1980
SESSION B-1
DEFECTS, AND CHARACTERIZATION
TECHNIQUES
W. L. Brown, Bell Laboratories, Murray Hill, NJ

Tuesday Morning, November 18, 1980

8:20—OPENING REMARKS

8:30—*Electron Paramagnetic Resonance Studies of Defects in Semiconductors, James W. Corbett, SUNY, Albany, NY

9:00—*Defect Characterization by Junction Spectroscopy, L. C. Kimerling, Bell Laboratories, Murray Hill, NJ

9:30—*Microanalysis Using STEM, D. M. Maher, Bell Laboratories, Murray Hill, NJ

10:00—*Ion Channeling Techniques for Defect Studies, B. R. Appleton, ORNL, Oak Ridge, TN

10:30—COFFEE BREAK


11:10—*X-Ray Diffuse Scattering for the Study of Defect Clusters in Silicon, B. C. Larson, ORNL, Oak Ridge, TN

11:40—*Application of Channeling to Defect Studies in Crystals, W. K. Chu, IBM, Hopewell Junction, NY

12:10—LUNCH

*Invited Talk
SESSION B-2
FUNDAMENTALS OF DEFECTS — I

Co-Chairmen: F. W. Young, Jr., ORNL, Oak Ridge, TN
M. L. Swanson, Chalk River Laboratories, Canada

Tuesday Afternoon, November 18, 1980

2:00 — "Negative-U Properties for Point Defects in Silicon,
George D. Watkins, Lehigh University, Bethlehem, PA

2:30 — "Self-Interstilials in Silicon Between Absolute Zero
and the Melting Point, A. Seeger/W. Frank, Max-Planck-
Instutut fur Metallforschung, Germany

3:00 — "Ion Channeling Analysis of Disorder, S. T. Picraux,
Sandia Laboratories, Albuquerque, NM

3:30 — COFFEE BREAK

3:40 — "Dislocation Nucleation Models from Point Defect
Condensations in Silicon, T. Y. Tan, IBM T. J. Watson
Research Center, Yorktown Heights, NY

4:10 — Undissociated Dislocations and Intermediate De-
fects in A57 Ion Damaged Silicon, H. Foell, T. Y. Tan,
and W. Krakow, IBM T. J. Watson Research Center,
Yorktown Heights, NY

4:25 — Channeling Studies of Defect-Boron Complexes in
Silicon, M. L. Swanson, L. M. Howe, F. W. Saris, and
A. F. Quenneville, Chalk River Nuclear Laboratories,
Chalk River, Canada

4:40 — "A Tentative Identification of the Structure of
1113/ Stacking Faults in Silicon, T. Y. Tan, H. Foell,
and W. Krakow, IBM T. J. Watson Research Center,
Yorktown Heights, NY

4:55 — Detection of Di-Interstitial Chains in Ion Irradiated
Silicon, W. Krakow, T. Y. Tan, and H. Foell, IBM T. J.
Watson Research Center, Yorktown Heights, NY

5:10 — Donors Generated at 750°C, Relation with Oxygen
Precipitation and Carbon, V. Caccca, European
Materials Competence Center

SESSION B-3
FUNDAMENTALS OF DEFECTS — II

Co-Chairmen: F. W. Balluffi, MIT, Cambridge, MA
J. H. Crawford, Jr., Univ. NC, Chapel Hill, NC

Wednesday Morning, November 19, 1980

8:30 — "Electronic and Mechanical Properties of Disloca-
tions in Semiconductors, P. B. Hirsch, University of
Oxford, England

9:00 — "Dislocation Defect States in Deformed Silicon,
J. R. Patel, Bell Laboratories, Murray Hill, NJ

9:30 — "On the Formation and Effects of Secondary
Defects in Ion Implanted Silicon, J. Washburn, Law-
rence Berkeley Labs., Berkeley, CA

10:00 — Characterization of Dislocations and Interfaces
in Semiconductors by HREM, J. C. H. Spence and
A. Olsen, Arizona State University., Tempe, AZ

10:15 — Structure Imaging by High Resolution Transmis-
sion Electron Microscopy of the Silicon on Sapphire

*Invited Talk
SESSION B-4
DEFECTS RELATED TO CRYSTAL
GROWTH, AND DEVICE PROCESSING — I

Co-Chairmen: G. Thomas, University of California, Berkeley, CA
C. W. White, ORNL, Oak Ridge, TN

Wednesday Afternoon, November 19, 1980

2:00 — *Swirl Defects in As-Grown Silicon Crystals,
A. J. R. De Kock, Philips Research Labs., Eindhoven, Netherlands

2:30 — *Precipitation of Oxygen and Intrinsic Gettering
in Silicon, W. K. Tice, IBM, Essex Junction, VT

3:00 — Nucleation of Oxygen Precipitation in Silicon,
H. F. Schaake, R. F. Pinizzotto and S. C. Baber, Texas
Instruments Inc., Dallas TX

3:15 — The Effect of Nucleation Temperature on the
Morphology of Stacking Faults in CZ Silicon, R. F.
Pinizzotto and H. F. Schaake, Texas Instruments Inc.,
Dallas, TX

3:30 — COFFEE BREAK

3:40 — *Electron Microscope Characterization of the
Microstructure of Pulse-Annealed Semiconductors,
A. G. Cullis, Royal Signals and Radar Establishment,
England

4:10 — Laser Annealing and Growth Processes at Crystal-
ization Interfaces in a-Si:H, C. S. Murty and R. Gronsky,
Lawrence Berkeley Labs., Berkeley, CA

4:25 — Defects in Ion Implanted, Laser Annealed Silicon,
J. Fletcher and J. Narayan, ORNL, Oak Ridge, TN

4:40 — TEM Investigation of the Microstructure in Laser-
Crystallized Ge Films, R. P. Gale, John C. C. Fan, R. L.
Chapman, and H. J. Zeiger, MIT, Lexington, MA

*Invited Talk
SESSION B-5
DEFECTS RELATED TO CRYSTAL
GROWTH, AND DEVICE PROCESSING – II

Co-Chairmen: G. W. Cullen, RCA Labs., Princeton, NJ
K. A. Jackson, Bell Labs., Murray Hill, NJ

Thursday Morning, November 20, 1980

8:30—*Real-Time X-Ray Topographic Observation of Melting and Growth Processes of Silicon Crystals, J. Chikawa and F. Sato, NHK Broadcasting Science Research Labs., Japan

9:00—Microstructure of Polycrystalline SiC Containing Excess Si after Neutron and Ion Irradiation, S. D. Harrison and J. C. Corelli, Rensselaer Polytechnic Institute, Troy, NY


9:30—TEM/STEM Study of Grain Boundary Structure and Segregation in CVD Thin-Film Silicon, J. H. Rose and R. Gronsky, Lawrence Berkeley Labs., Berkeley, CA

9:45—Characterization of the Defect Structure of Si-SiO2 Interfaces, J. H. Mazur and R. Gronsky, Lawrence Berkeley Labs., Berkeley, CA

10:00—Defect Structure of the Epitaxial Pd2Si-Silicon Interface, D. Chems, Oxford University, Oxford, UK and D. A. Smith, IBM T. J. Watson Research Center, Yorktown Heights, NY


10:30—COFFEE BREAK

10:40—*Oxygen, Oxidation Stacking Faults, and Related Phenomena in Silicon, S. M. Hu, IBM, Hopewell Junction, NY

11:10—The Effect of Impurity Concentration on the Morphology of Microdefects in CZ Silicon, R. F. Pinizzotto and H. F. Schaake, Texas Instruments Inc., Dallas, TX


11:40—Characterization of Defects in Silicon Ribbons by Combined TEM and EBIC, H. Strunk, Max-Planck-Institut fur Metallforschung, Germany; B. Cunningham, and D. Ast, Cornell University, Ithaca, NY

*Invited Talk
SESSION B-6
DEFECTS IN COMPOUND SEMICONDUCTORS

Co-Chairmen: K. N. Tu, IBM, Yorktown Heights, NY
R. Sinclair, Stanford University, Stanford, CA

Thursday Afternoon, November 20, 1980

1:45—*Luminescence and Structural Properties of Ga_{1-x}Al_{x}As Double Heterostructures and Multiple Quantum Well Structures, P. M. Petroff, Bell Labs., Murray Hill, NJ

2:15—Electronic Defects in Metalorganic GaA1As, N. M. Johnson, R. D. Burnham, and D. Fekete, Xerox Palo Alto Research Center, Palo Alto, CA


2:45—Effect of Electric Field and Current Injection on the Main Electron Trap in Bulk GaAs, S. Makram-Ebeid, Laboratoires d’Electronique et de Physique Appliquee, France

3:00—Submillimeter EPR Observation of the As Antisite Defect in GaAs, R. J. Wagner, J. J. Krebs, and G. H. Stauss, Naval Research Lab., Washington, DC

3:15—COFFEE BREAK

3:25—*The Correlation of Structure and Electrical Behavior of InP and InGaAsP Materials, S. Mahajan, Bell Labs., Murray Hill, NJ

3:55—High Resolution TEM Imaging of Defects and Interfaces in II-VI Compound Semiconductors, F. A. Ponce, T. Yamashita, R. Sinclair and R. H. Bube, Stanford University, Stanford, CA

4:10—Investigation of Defect Concentration Distributions in Ion-Implanted and Annealed GaAs, K. L. Wang, G. P. Li, University of California, Los Angeles, CA; P. Asbeck and G. Kirkpatrick, Rockwell International, Thousand Oaks, CA

4:25—Scanning Cathodoluminescence Microscopy of Grain Boundaries in GaAs, J. P. Salerno, R. P. Gale, and John C. C. Fan, MIT, Lexington, MA


*Invited Talk
SYMPOSIUM C  
SEMICONDUCTOR INTERFACES  
Chairmen: W. K. Chu, IBM  
J. W. Mayer, Cornell  
November 17-18, 1980

SESSION C-1  
METAL/Si AND SILICIDE/Si

STRUCTURES  
Monday Morning, November 17, 1980

9:00

1. Use of Electron Spectroscopies to Understand Metal Si Contacts, W. E. Spicer, G. Rossi, Peter Law, C. R. Helms (Stanford), L. Braicovich and I. Abbati (Politecnico, Milano, Italy)

2. Channeling Studies of Silicide-Silicon Interfaces, Nathan W. Cheung and J. W. Mayer (Caltech)

3. The Formation of the Silicon-Silicide Interface, J. L. Freeouf (IBM)

4. Transmission Electron Microscopy Study of Silicide-Silicon Interfaces, Helmut Foell (IBM)

5. XPS Study of Metal/Semiconductor Interfaces: The Ni/Si System, P. J. Grunthaner, F. J. Grunthaner (JPL), and J. W. Mayer (Cornell)

SESSION C-2  
METAL/GaAs AND METAL/Si  
Monday Afternoon, November 17, 1980

2:00

1. Atomic Redistribution at Metal/III-V Compound Semiconductor Interfaces, L. J. Brillson (Xerox)


3. Interfacial Structure and Reactivity of Ni on Si (111), Robert J. Culbertson (Bell Labs)

4. A Review of Electrical and Metallurgical Properties of Silicides with Emphasis on Interfaces, G. Ottaviani (Physics Inst. Modena, Italy)

SESSION C-3  
HETEROJUNCTIONS  
Tuesday Morning, November 18, 1980

9:00

1. Formation and Electronic Structure of Ge Heterojunctions with GaAs (110) and A1As (110), Robert S. Bauer (Xerox)

2. Backscattering and Channeling Study of Superlattice Interfaces, W. K. Chu (IBM)

3. The Silicon-Germanium Interface from a Microscopic Viewpoint, G. Margaritondo (Wisconsin)
SYMPOSIUM D
INTERNATIONAL SYMPOSIUM
ON THE SCIENTIFIC BASIS
FOR NUCLEAR WASTE
MANAGEMENT
Chairman: John G. Moore, Oak Ridge National Laboratory, Oak Ridge, TN
November 17-20, 1980

ABOUT THE SYMPOSIUM
The purpose of this Symposium is to provide an inter-disciplinary forum for discussion of the scientific aspects of nuclear waste management. Invited and contributed papers will be presented on research dealing with all levels and types of radioactive waste and their management. The presentations will emphasize scientific foundations underlying such subjects areas as:

- treatment and disposal of non-high-level radioactive waste
- waste-near-field interaction
- waste form processes and properties
- methodology and standards for waste management
- canister/container lifetime and compatibility
- backfill barriers
- in situ migration
- characterization and modeling of fractured rock
- chemistry of waste elements in the geologic environment
- performance assessment of nuclear waste management
- related topics in geology (e.g., predictive geology, metamictization, natural analogues)

PROCEEDINGS AND ABSTRACTS
Arrangements are being made to publish the proceedings of the Symposium by direct reproduction of camera-ready copy. Abstracts of the papers will be available at the conference.

PROGRAM COMMITTEE
J. G. Moore, Oak Ridge National Laboratory, USA (Chairman)
E. A. Bryant, Los Alamos Scientific Laboratory, USA
J. O. Duguid, Office of Nuclear Waste Isolation, USA
C. J. Northrup, Jr., Sandia Laboratories, USA
L. D. Ramspott, Lawrence Livermore Laboratory, USA
W. A. Ross, Nuclear Waste Materials Characterization Center, USA
J. G. Steger, Los Alamos Scientific Laboratory, USA
S. V. Toepf, Savannah River Laboratory, USA
STEWING COMMITTEE
K. J. Notz, Oak Ridge National Laboratory, USA (Chairman)
G. H. Daly, Department of Energy, USA
D. E. Ferguson, Oak Ridge National Laboratory, USA
R. H. Flowers, Atomic Energy Research Establishment, UK
F. Girardi, Ispra Establishment, Italy
T. Ishihara, Radioactive Waste Management Center, Japan
R. W. Lynch, Sandia Laboratories, USA
S. A. Mayman, Atomic Energy of Canada Ltd., Canada
G. J. McCarthy, North Dakota State University, USA
E. Merz, Kernforschungszentrum Julich, FRG
L. Nilsson, KBS Project, Sweden
D. M. Rohrer, Nuclear Regulatory Commission, USA
R. Roy, Pennsylvania State University, USA
T. E. Scott, Ames Laboratory, USA
C. Sombret, Centre d’Etudes Nuclaires, France
W. S. Twenhofel, U.S. Geological Survey, USA
V. I. Spitsyn, Academy of Sciences, USSR

SESSION D-A
REPOSITORY CHARACTERIZATION

Presiding: J. O. Duguid, ONWI, Columbus, OH
S. A. Mayman, AECL, Canada

Monday, November 17, 1980

8:15–11:45

GREETINGS AND OPENING REMARKS — J. G. Moore


A3 — Evaluation of Product Specifications with Safety Analysis for a Disposal Mine. E. Warnecke and H. Illi, Physikalisch-Technische Bundesanstalt, Braunschweig, FRG

A4 — Predicting the Reaction State of Brines in Proposed Regions of Nuclear Waste Disposal Sites. R. L. Bassett, E. Duncan, and J. Griffin, Bureau of Economic Geology, The University of Texas at Austin, TX

10:00–10:25 — COFFEE BREAK

SESSION D-B
GLASS WASTE FORMS

Presiding: C. J. Northrup, Sandia Laboratories
Albuquerque, NM
C. Sombret, Centre de Marcoule, France

B2—Advanced Method for Making Vitreous Waste Forms, J. M. Pope and D. E. Harrison, Westinghouse Research and Development Center, Pittsburgh, PA


SESSION D-C
CRystalline waste forms

Presiding: G. J. McCarthy, North Dakota State University, Fargo, ND
J. D. Tewhey, Lawrence Livermore Laboratory, Livermore, CA

1:15–5:30


C4—Immobilization of High Level Nuclear Reactor Waste in Synroc: Current Status, A. E. Ringwood, Australian National University, Canberra, Australia


3:30–3:50—BREAK

SESSION D-D
Natural analogues

Presiding: N. J. Hubbard, ONWI, Columbus, OH
R. C. Ewing, University of New Mexico, Albuquerque, NM

D1—Alkali and Alkaline Earth Element Studies at OKLO, D. G. Brookins, Department of Geology, University of New Mexico, Albuquerque, NM

D2—Durability of Rhyolitic Obsidian Glass Inferred from Hydration Dating Research, J. E. Ericson, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA


D4—Backfill Barriers: The Use of Engineered Barriers Based on Geologic Materials to Assure Isolation of Radioactive Wastes in a Repository, J. A. Apps, Law-
SESSION D-E
LEACH STUDIES

Presiding: W. A. Ross, Pacific Northwest Laboratory, Richland, WA
F. Girardi, CEC, Italy

Tuesday, November 18, 1980
8:00—11:40

E1 — Surface Analysis—Its Uses and Abuses in Waste Form Evaluation, G. L. McVay and L. R. Pederson, Pacific Northwest Laboratory, Richland, WA

E2 — Are Solubility Limits of Importance to Leaching?, Allen Ogard, G. Bentley, E. Bryant, C. Duffy, J. Gisham, E. Norris, C. Orth, and K. Thomas, Los Alamos Scientific Laboratory, Los Alamos, NM


9:45—10:10 — COFFEE BREAK

SESSION D-F
RADIATION EFFECTS

Presiding: S. V. Topp, Savannah River Laboratory, Aiken, SC
P. W. Levy, Brookhaven National Laboratory, Upton, NY

F1 — Spontaneous Fragmentation of an Alpha-Active Ceramic—A Mechanism for Dispersion of Solid Waste, F. W. Clinard, Jr., and D. L. Rohr, Los Alamos Scientific Laboratory, Los Alamos, NM

F2 — Experimental Study of Structural Damage in Crystalline Nuclear Waste Phases from Fission Fragment Irradiation, E. R. Vance and K. K. S. Pillay, Pennsylvania State University, University Park, PA

F3 — Metamictization by Heavy Ion Bombardment of α Quartz, Zircon, Monazite and Nitride Structures, L. Cartz, F. G. Kariolis, R. A. Fournelle, A. Gowda, K. Ramasami, Marquette University, Milwaukee, WI and M. Billy, Universite de Limoges, Limoges, France

SESSION D-G
POSTER SESSION
REPOSITORY CHARACTERIZATION,
WASTE FORMS AND LEACH STUDIES

Presiding: K. J. Notz, Oak Ridge National Laboratory
Oak Ridge, TN
R. W. Lynch, Sandia Laboratories
Albuquerque, NM

2:30—5:00

G1 — Laboratory Investigations on the Water Content
Within the Rock-salt and Its Behavior in a Temperature Field of Disposed High Level Waste, N. Jockwer, Institut fur Tiefenragung, Braunschweig, FRG


G4 – Geoscientific Evaluation of the Radioactive Waste Isolation in Japan, K. Doi, Radioactive Waste Management Center, Tokyo, Japan

G5 – Structural and Redox Properties of Uranium in CakaMg–Al Silicate Glasses, H. D. Schreiber, G. B. Balag, B. J. Williams and S. M. Andrews, Department of Chemistry, Virginia Military Institute, Lexington, VA

G6 – Stable Product Low-Leach Glasses, S. Karkhanis, P. J. Melling, G. M. Bancroft, and W. S. Fyfe, Department of Chemistry, Department of Geology and Centre for Chemical Physics, University of Western Ontario, London, Ontario, Canada

G7 – Development of An Improved Ion-Exchange Process for Removing Cesium and Strontium from High-Level Radioactive Liquid Wastes, R. M. Wallace and R. B. Ferguson, Savannah River Laboratory, Aiken, SC

G8 – Immobilization of Savannah River Plant Sludge Waste by Consolidation with Calcium Titanate, A. W. Lynch, Sandia National Laboratories, Albuquerque, NM


G13 – Valence States of Actinides in Synthetic Monozites, G. W. Baill and F. L. Kelley, Radian Corp., Austin, TX, J. A. Young, and L. A. Boatner, Oak Ridge National Laboratory, Oak Ridge, TN

G14 – Crystal Chemistry and Phase Relations in the Synthetic Minerals of Ceramic Waste Forms: II. The Crystal Chemical Role of Cerium and Monozite Structure Orthophosphates of UO2+ and ThO2+, J. G. Peepin, E. R. Vance, D. D. Davis, Materials Research Laboratory, Penn State University, University Park, PA, and G. J. McCarthy, Departments of Chemistry and Geology, North Dakota State University, Fargo, ND
G15—Predicting Long-Term Leaching Behavior Using High-Temperature Leach Tests, J. H. Westsik, Jr., Pacific Northwest Laboratories, Richland, WA


G17—The Influence of Surface Processes in Waste Form Leaching, A. J. Machiels and C. Pescatore, University of Illinois, Urbana, IL

G18—Probable Leaching Mechanisms for UO2 and Spent Fuel, R. Wang and Y. B. Katayama, Pacific Northwest Laboratory, Richland, WA


G21—Factors Controlling the Release Source-Term in a Granite Waste Repository, D. Savage and N. A. Chapman, Harwell Laboratory, Harwell, Oxfordshire, UK

**SESSION D-H**

**NON-HIGH LEVEL WASTE**

Presiding: J. G. Stiger, Los Alamos Scientific Laboratory
Los Alamos, NM
E. Merz, KFA Jülich, Germany
Wednesday, November 19, 1980

8:00—11:25


H2—Treatment of Cladding Hulls by the HIPOW Process, H. T. Larke, and R. Tegman, ASEA AB, Robertsfort, Sweden


H4—Studies on Sintered Titanates and Zeolites as Hosts for Mean Level Radioactive Waste, S. Forberg and T. Westermark, Royal Institute of Technology, Stockholm, Sweden and L. Faith, Institute of Technology, Lund, Sweden

9:45—10:10—COFFEE BREAK

H5—Diffusion of Cs and I in Concrete, K. Anderson, B. Torstenfelt and B. Allard, Chalmers University of Technology, Göteborg, Sweden

H6—Precipitation of Radiotrivotnium in Soil, B. P. Spalding, Oak Ridge National Laboratory, Oak Ridge, TN
H7 – Synthesis, Characterization and Soil Interactions of Ethylene-diamine-tetraacetic Acid (EDTA) and Diethylenetriaminepentaacetic Acid (DTPA) Complexes of 99Technetium, L. Y. Martin, D. Rai, and J. A. Franz, Pacific Northwest Laboratory, Richland, WA

SESSION D-I
RADIONUCLIDE MIGRATION

Presiding: E. A. Bryant, Los Alamos Scientific Laboratory
Los Alamos, NM
T. Ishihara, Radioactive Waste Management Center
Tokyo, Japan

1:00–2:45

I1 – Prediction of Sorption Behavior of Actinides on Geologic Media, G. W. Beall, Radian Corporation, Austin, TX and B. Allard, Chalmers University of Technology, Gothenburg, Sweden

I2 – Cesium Migration Through Solid Cores of Magenta Dolomite, A. W. Lynch and R. G. Dosch, Sandia National Laboratories, Albuquerque, NM

I3 – Sorption Studies of H14CO3 on Some Geologic Media and Concrete, B. Allard, B. Torstenfelt, and K. Anderson, Chalmers University of Technology, Gothenburg, Sweden

I4 – Some Difficulties in Interpreting In-Situ Tracer Tests, Ivars Neratnieks, Royal Institute of Technology, Stockholm, Sweden

POSTER SESSION D-I
NATURAL ANALOGUES, RADIATION EFFECTS, NON-HIGH LEVEL WASTES
ENGINEERED BARRIERS, NUCLIDE MIGRATION AND PERFORMANCE

ASSESSMENT

Presiding: T. Scott, Ames Laboratory, Ames, Iowa
W. S. Tewhoeffel, USGS, Denver, Colorado

3:00–5:30

J1 – Natural Analogues for Crystalline Radioactive Waste Forms, Part II: Non-Actinide Phases, R. A. Haaker, and R. C. Ewing, University of New Mexico, Albuquerque, NM

J2 – Geochemical Study of a Lamprophyre Dike Near the WIPP Site, D. G. Brookins, University of New Mexico, Albuquerque, NM


J4 – Radiation Hardening of Rocksalt, G. W. Arnold, Sandia National Laboratories, Albuquerque, NM


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J11 – Melting Process to Condition Decladding Hulls Generated by the Reprocessing of LWR and FBR Spent Fuels, N. Jacquet-Francillon, G. Rabot, C. Sombret and R. Bonniaud, Commissariat a L’Energie Atomique, Bagnols sur Cez, France

J12 – Selecting Zeolites for Adsorption and/or Fixation of Cesium and Strontium, S. Komarneni and R. Roy, Materials Research Laboratory, Penn State University, University Park, PA


J17 – Analysis of Radionuclide Transport in Jointed Geologic Media, K. L. Erickson, Sandia National Laboratories, Albuquerque, NM

J18 – Seabed Smetite Clay: Temperature and pH Effects on Adsorption of Cs, Ba, Eu, B. T. Kenna, Sandia National Laboratories, Albuquerque, NM

J19 – The Characterization of Sorption in a Rock-Water/Nuclide System, I. G. McKinley, Harwell Laboratory, Harwell, Oxfordshire, UK

J20 – SrC12 Solubility in Complex Brines, M. A. Clynne, USGS, Menlo Park, CA, I. Ming Chou and J. L. Haas, Jr., USGS, Reston, VA

J21 – Thermal Analysis for a Spent Reactor Fuel Storage Test in Granite, D. N. Montan, Lawrence Livermore Laboratory, Livermore, CA
SESSION D-K
ENGINEERED BARRIERS

Presiding: L. D. Ramspott, Lawrence Livermore Laboratory, Livermore, CA
L. Nilsson, KBS Project, Stockholm, Sweden

Thursday, November 20, 1980

8:00–12:15

K1—Development of Engineered Barriers for the Long-term Containment of Nuclear Wastes, R. E. Westerman, Pacific Northwest Laboratory, Richland, WA

K2—Technical Barriers Against a Spreading of Disposed Radioactive Waste, Ernst-Peter Ueppelmann, Institute für Tiefenlagerung, Braunschweig, FRG


K5—The Bell Canyon Test and Results, C. L. Christensen and T. O. Hunter, Sandia National Laboratories, Albuquerque, NM

10:05–10:30—COFFEE BREAK

SESSION D-L
PERFORMANCE ASSESSMENT

Presiding: J. F. Kircher, ONWI, Columbus, OH
R. H. Flowers, AERE, Harwell, UK


L3—An Evaluation of the Predictive Ability of Radionuclide Transport in Groundwater Flow Systems, F. W. Schwartz, University of Alberta, Edmonton, Canada and L. Smith, University of Utah, Salt Lake City, UT

L4—An Analysis of the Use of Engineered Barriers for Geologic Isolation of Spent Fuel, M. O. Cloninger, Pacific Northwest Laboratory, Richland, WA
SESSION D-M
CURRENT TOPICS IN RADIOACTIVE WASTE MANAGEMENT

Presiding: J. G. Moore, Oak Ridge National Laboratory
Oak Ridge, TN
S. V. Topp, Savannah River Laboratory, Aiken, SC

2:00–5:00
M1 – Clean-up Problems at Three Mile Island, R. E. Brooks
Bank, Oak Ridge National Laboratory, Oak Ridge, TN
M2 – Activities of the State Planning Council on Low-level Radioactive Waste Management, John Stucker, Executive Director, State Planning Council, Washington, DC

CLOSING REMARKS – J. G. Moore

SYMPOSIUM E
PHOTO- THERMAL MATERIALS

Chairman: B. O. Seraphin
Optical Sciences Center, University of Arizona
Thursday Morning, November 20, 1980

8:30 – Reflectors for Solar Concentrators, Patrick J. Call,
Materials Branch, Solar Energy Research Institute,
Golden, CO 80401

Department of Physics, and R. A. Bahrman and H. G. Craighead,
Department of Applied and Engineering Physics, Cornell University, Ithaca, NY 14853

10:00 – BREAK

10:30 – Chemical Vapor Deposited Spectrally Selective Surfaces for High Temperature Photo-Thermal Conversion, David D. Allred, Optical Sciences Center, University of Arizona, Tucson, AZ 85721

11:15 – Is Black Chrome a Viable High Temperature Spectrally Selective Coating?, A. Ignatiev, Department of Physics, University of Houston, Houston, TX 77004
SYMPOSIUM F
ELECTRON MICROSCOPE IMAGING AND DIFFRACTION TECHNIQUES IN MATERIALS SCIENCE

Program Chairman: D. W. Krakow, IBM Corporation
T. J. Watson Research Center, Yorktown Heights, NY

Monday, November 17, 1980

9:00—John M. Cowley, Arizona State University
STEM Imaging and Microdiffraction in the ASU National Science Foundation Regional Instrumentation Facility

9:30—Gareth Thomas, University of California, Berkeley
High Voltage Electron Microscopy and the National Center for Electron Microscopy

10:00—Michael Isaacson, Cornell University
Atomic Level STEM Imaging

10:30—BREAK

10:45—Roger Morton, Bausch and Lomb Analytical Systems Division
A Review of Automated Image Analysis Techniques in Electron Microscopy

11:15—R. W. Carpenter, Oak Ridge National Laboratory
Microdiffraction and Microchemical Analysis

11:45—LUNCH

2:00—Sumio Iijima, Arizona State University
High Resolution Transmission Electron Microscopy of Lattices and Surfaces

2:30—W. C. Nixon, Cambridge University
The 600kV High Voltage High Resolution TEM

3:00—Alec Broers, IBM Corporation
High Resolution Electron Beam Lithography

3:30—BREAK

3:45—R. Sinclair, Stanford University
Lattice Imaging and Electronic Materials

4:15—William Krakow, IBM Corporation
Diffuse Scattering and Image Calculations of Short Range Order

4:45—End of Symposium
SYMPOSIUM G
SPECTROSCOPIC
CHARACTERIZATION OF
HETEROGENEOUS CATALYSTS

Chairman: G. L. Schrader, Iowa State University

Monday, November 17, 1980

8:45—R. Van Duyne, Northwestern University
Recent Developments in Surface-Enhanced Raman Spectroscopy

9:30—T. E. Furtak, Rensselaer Polytechnic
J. Kester, Ames Laboratory-USDOE and Iowa State University
Surface Enhanced Raman Scattering from Pyridine Adsorbed onto Silver Pd/Alloy Surfaces

10:15—BREAK

10:45—A. W. Klaassen and C. G. Hill, Jr., University of Wisconsin
Raman Studies of Aldol Condensation Reactions on Sodium Hydroxide-Treated Silica Gel

11:15—C. P. Cheng, University of Delaware
G. L. Schrader, Iowa State University
Raman Spectroscopy of the Sulfidation of Cobalt Molybdate Hydrodesulfurization Catalysts

12:00—LUNCH

1:30—C. L. Angell, Union Carbide Corporation
Application of FTIR Spectrometry to Catalyst Studies and Surface Reactions

2:15—J. Onufenko, S. H. Moon, H. Windawi and J. R. Katzer, University of Delaware
An FTIR Study of Adsorption of CO on Alumina Supported Cobalt and Cobalt Oxide Surfaces

3:00—BREAK

3:30—R. Kellerman, Xerox Webster Research Center
Diffuse Reflectance Spectroscopy

4:00—C. E. Lyman, DuPont Experimental Station
X-ray Emission Spectroscopy and Electron Energy Loss Spectroscopy

4:45—End of Symposium
SYMPOSIUM H
CATALYST SUPPORTS AND SUPPORT EFFECTS
Chairmen: D. R. Monroe, General Motors Research Laboratories, Warren, MI 48090
S. J. Tauster, Exxon Research and Engineering, Linden, NJ 07036
Tuesday November 18, 1980

9:00 – Opening Remarks – S. J. Tauster, Exxon

9:05 – A New Type of Metal-Support Interaction Between Platinum and Electronic Conductor Supports Like Carbides of W, Ti, Ta and Nb, A. Bertrand, M. Astier and S. J. Teichner, Labatoire de Catalyse Appliquee et Cinetique Heterogene, Universite Claude Bernard, France


10:35 – COFFEE BREAK


11:30 – Stabilization of High Surface Area Aluminas, B. R. Powell, Jr., D. R. Monroe and J. L. Johnson, General Motors Research Laboratories

12:00 – LUNCH

2:00 – Thermodynamics and Kinetics of Platinum-Oxide Support Interactions, W. L. Worrell, University of Pennsylvania

2:30 – Iron-Support Interactions Studied by Mossbauer Spectroscopy, J. Phillips and J. A. Dumesic, University of Wisconsin

3:00 – Influence of Alkali Metal Ions (Li+, K+) Content in γ-Al2O3 on the Dispersion of the Supported “NiO” Phase and Its Interaction with the Carrier, M. Houla, J. Lemaitre and B. Delmon, Groupe de Physico-Chimie Minerale et de Catalyse, Universite Catholique de Louvain, Belgium

3:30 – COFFEE BREAK

4:00 – Crystallite Size and Support Effects in CO Hydrogenation, C. H. Bartholomew, Brigham Young University

4:30 – On the Problem of Determining the Percentage Exposed of Platinum on Alumina-Supported Catalysts—A Strong Metal-Support Interaction, K. Kunimori, T. Okouchi and T. Uchijima, Institute of Materials Science, University of Tsukuba, Japan

5:00 – Studies on the Structure of the Supporting Rhodium Catalyst for Carbonylation of Menthanol to
SYMPOSIUM I
HYDROGEN AT SURFACES AND INTERFACES
Chairmen: L. C. Feldman, Bell Labs
M. L. Knotek, Sandia
November 17-19, 1980

SESSION I-1
ANALYSIS AND DETECTION
OF HYDROGEN
Monday, November 17

9:00—Analysis of Hydrogen by Secondary Ion Mass Spectrometry, Charles W. Magee, RCA Labs
9:45—Nuclear Reaction Analysis of Hydrogen in Solids: Applications in Physics, Chemistry and Archaeometry, W. A. Lanford, SUNY/Albany
10:30—COFFEE BREAK
10:50—Hydrogen Detection by Electron and Photon Stimulated Desorption, M. M. Traum, Bell Labs
11:35—Elastic Recoil Detection Analysis of Aqueous Corrosion of Phosphate Glasses, B. C. Bunker, Sandia

SESSION I-2
INTERACTION OF HYDROGEN
WITH CLEAN SURFACES

2:00—H-Induced Reconstruction of Metal Surfaces, P. Estrup, Brown University
2:45—The Electronic Structure of Chemisorbed Hydrogen, D. R. Hamann, Bell Labs
3:30—COFFEE BREAK
4:00—The Bonding States of H on Ni, Pd and Pt Surfaces, E. W. Plummer and W. Eberhardt, University of Pennsylvania
4:45—Hydrogen Dissociation of Pd Overlayers on Nb: The Influence of Electronic and Geometrical Structure, Myron Strongin, M. El-Batanouny and M. A. Pick, Brookhaven National Laboratory
SESSION I-3
CATALYSIS
Tuesday, November 18

9:00—Interactions of Hydrogen, Oxygen and Hydrogen-Containing Molecules at Pt Surfaces, Galen B. Fisher, General Motors Labs


10:30—COFFEE BREAK

10:50—Confined Molecules: N.M.R. Studies of Ammonia Intercalation Compounds and Water in Coal Pores, B. Silbernagel, Exxon


SESSION I-4
FIRST WALL PROBLEMS

2:00—The Flux of Hydrogen from Tokamak Devices, S. A. Cohen, Plasma Physics Laboratory, Princeton

2:45—Physical Interactions of Low-Energy Hydrogen at Surfaces, J. B. Roberto, Oak Ridge National Laboratory

3:30—COFFEE BREAK

4:00—First Wall Hydrogen Chemistry, Robert R. Rye, Sandia


SESSION I-5
SEMICONDUCTORS: INTERFACES AND GRAIN BOUNDARIES

Wednesday, November 19, 1980

9:00—The Effect of Hydrogen on the Properties of Amorphous and Polycrystalline Si, B. G. Bagley, Bell Labs

9:45—A.E.S. Investigations of Ordered and Disordered Silicon:Hydrogen Surfaces, H. H. Madden, Sandia

10:10—COFFEE BREAK

10:30—Hydrogen in Silicon-Based Insulators Used in Microelectronics, H. J. Stein, Sandia

11:15—Investigation of Hydrogen at the SiO₂/Si Interface, I. S. T. Tsong, Penn State University

SESSION I-6
HYDROGEN IN METALS

2:00—Surface Segregation and Hydrogen Related Fracture of Nickel, H. Birnbaum, University of Illinois
2:45—A Quantum Chemical Atomistic Model of Hydrogen Interaction with Metals, C. F. Melius, Sandia

3:30—COFFEE BREAK

3:50—Hydrogen-induced Degradation of Iron and Steel, H. H. Johnson, Cornell


5:00—Scanning F.S.D. Studies of H₂, O₂ and H₂O on Polycrystalline Ta., Lawrence A. Larson, NASA/AMES

SYMPOSIUM J
NUCLEAR AND ELECTRON RESONANCE SPECTROSCOPIES APPLIED TO MATERIALS SCIENCE
Chairpersons: E. N. Kaufmann, Bell Laboratories
G. K. Shenoy, Argonne National Laboratory
November 18-20, 1980

PLENARY SESSION J-1
MOSSBAUER EFFECT
Tuesday Afternoon, November 18, 1980

2:00—Introductory Remarks, E. N. Kaufmann, Bell Laboratories

2:10—The Mossbauer Effect and Some Applications, G. K. Shenoy, Argonne National Laboratory

2:55—Coal and the Mossbauer Effect, P. A. Montano, University of West Virginia

3:30—COFFEE BREAK

3:50—Mossbauer Studies of Ion-Implanted Alloys, G. Longworth, AERE Harwell

4:25—Mossbauer Spectroscopy Studies of Amorphous Metallic Solids, C. L. Chien, Johns Hopkins University

10:30—RECEPTION

PLENARY SESSION J-2
ELECTRON RESONANCE
Wednesday Morning, November 19

8:45—EPR of Material Properties and Processes, K. L. Brower, Sandia Laboratories

9:30—Catalysts Examined by ESR, B. G. Silbernegel, Exxon Research Laboratory

10:05—COFFEE BREAK
10:25—Defects in III-V Semiconductors Studied through EPR, T. A. Kennedy, Naval Research Laboratory
11:00—ESR Studies in Amorphous Insulators, D. L. Griscoccom, Naval Research Laboratory
11:35—Electron Spin Resonance Studies of Amorphous Silicon, D. K. Biegelsen, Xerox Palo Alto Research
12:10—LUNCH

PLENARY SESSION J-3
SPIN PRECESSION (A)
Wednesday Afternoon, November 19

2:00—Some Applications of Spin Precession Methods to Problems in Materials Science, E. N. Kaufmann, Bell Laboratories
2:45—Defects in Metals Detected by Spin Precession Methods, E. Recknagel, University Konstanz
3:20—POSTER SESSION — I (Refreshments)
5:30—DINNER
8:30—DISCUSSION SESSION (Followed by wine and cheese)

PLENARY SESSION J-4
NUCLEAR RESONANCE
Thursday Morning, November 20

8:45—Nuclear Resonance and Its Application to Alloys, L. H. Bennett, National Bureau of Standards
9:30—Magnetic Resonance as a Probe of Anisotropic Conductors, W. C. Clark, UCLA
10:05—COFFEE BREAK
10:25—NMR Techniques for Studying Ionic Diffusion in Solids, D. C. Ailion, University of Utah
11:00—Nuclear Magnetic Resonance Studies of Type I Superconductors, F. Y. Fradin, Argonne National Laboratory
11:35—Hydrides Examined by Nuclear Magnetic Resonance, R. G. Barnes, Ames Laboratory — USDOE and Iowa State University
12:10—LUNCH

PLENARY SESSION J-5
SPIN PRECESSION (B)
Thursday Afternoon, November 20

2:00—Helium in Metals, H. de Waard, University of Groningen
2:35—Muons as Light Hydrogen Probes—Diffusion and Trapping, D. Richter, KFA Julich
3:10—POSTER SESSION — II (Refreshments)
5:20—Symposium Closing
POSTER SESSION PAPERS

Electronic Interactions and Phase Segregation in Ternary Iron Rich FeMnSb Solid Solutions (M = Ti, V, Cr, Mn, Co, Ni), J. M. Friedt, M. Maurer, and M. C. Cadavel, Centre de Recherches Nucleaires et Laboratoire de Magnetisme et Structure Electronique des Solides, Strasbourg, France

Isotope Effect on the Electronic Structure of Hydrogen in Metals. P. Jena, Physics Department, Michigan Technological University, Houghton, MI 49931, and Physics Department, Virginia Commonwealth University, Richmond, VA 23284

Quadrupole Hyperfine Interaction and Magnetic Hyperfine Field in FeOCl and its Intercalates. Yonezo Maeda and Rolfe H. Herber, Department of Chemistry, Rutgers University, New Brunswick, NJ 08903

Radiation Damage Studies of USn_3. T. K. McGuire and Rolfe H. Herber, Department of Chemistry, Rutgers University, New Brunswick, NJ 08903

Muon Spin Depolarization in Metals with Dilute Magnetic Impurities. J. A. Brown, R. H. Heffner, R. L. Hutson, M. Leon, C. E. Olsen, M. E. Schillaci, Los Alamos Scientific Laboratory, Los Alamos, NM 87545; S. A. Dodds, T. L. Estle, Rice University, Houston, TX 77001; P. M. Richards, Sandia Laboratories, Albuquerque, NM 87185

Proton NMR Spin-Lattice Relaxation Time Characterization of a-Si:H Structure. M. E. Lowry, R. G. Barnes, D. R. Torgeson, and F. R. Jeffrey, Ames Laboratory-USDOE and Department of Physics, Iowa State University, Ames, IA 50011

The Nature of Fluorine Modified Oxide Surfaces: An NMR Study. John R. Schlup and Robert W. Vaughan, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA 91125

Motional Correlation Time of Dilute ^{111}Cd Impurities in Se-Rich Liquid Se-Te Alloys. D. K. Gaskill, J. A. Gardner, K. S. Krane, K. Krusch, Department of Physics, Oregon State University, Corvallis, OR 97331 and R. L. Rasen, Department of Physics, Oregon State University and University of Maryland, Baltimore County, Catonsville, MD 21228

NMR in Liquid Semiconducting Sn_xTe_1-x. R. Dupree, John A. Gardner, and D. J. Kirby, University of Warwick, Coventry CV4 7AL, England


A Method for Determining Impurity-Host Force Constant Ratios. Berend Kolk, Physics Department, Boston University, Boston, MA 02215

Hydrogen Location, Phases and Electron Density of States in Metal Hydrides from Electron Spin Resonance Spectra of Dilute Rare Earth Impurities. E. L. Venturini, Sandia National Laboratories, Albuquerque, NM 87185

Solid State NMR Studies of the Adsorbed States of Formic Acid on Y Zeolites. T. Michael Duncan and Robert W. Vaughan, California Institute of Technology, Pasadena, CA 91125

Impurity Diffusion by NMR. James R. Beckett, Jean Pourquie, and David C. Ailion, Department of Physics, University of Utah, Salt Lake City, UT 84112

NMR Measurements of Sodium Ion Motion and Site Structure in a Single Crystal of Na$_3$Alumina. Cecil E. Hayes and David C. Ailion, Department of Physics, University of Utah, Salt Lake City, UT 84112

Electric Quadrupole Interactions at $^{181}$Ta in RNi$_5$ Intermetallic Compounds. M. B. Kurup, K. G. Prasad, S. K. Malik and R. P. Sharma, Tata Institute of Fundamental Research, Bombay 400005, India


Study of Internal Indium Oxidation in Silver by TDPAC. A. F. Pasquevich, F. H. Sanchez, A. G. Bibiloni, C. P. Massolo and A. Lopez-Garcia, Departamento de Fisica, Universidad Nacional de La Plata, Argentina

The Utility of the Mossbauer Effect in the Assessment of Chemical Transformations in Unsupported Catalyst Systems as a Function of the Metal Salt. Mary L. Good, M. D. Patil and J. T. Donner, Division of Engineering Research, Louisiana State University, Baton Rouge, LA 70803

Atomic Transport Mechanism Investigated by Mossbauer Spectroscopy, Positron Annihilation and NMR Experiments. Christian Janot, Laboratoire de Physique du Solide, (L.A. 155), Université de NANCY, France

Spin Susceptibility of Intercalated Graphite and Doped Polyacetylene. James W. Kafer and Seiichiro Ikehata, Department of Physics, University of Pennsylvania, Philadelphia, PA 19104

EPR of Mn$^{2+}$ in Ni(CH$_3$COO)$_2$·4H$_2$O and K$_2$Ni(SO$_4$)$_2$·3H$_2$O. Sushil K. Misra and M. Jalochowski, Physics Department, Concordia University, Montreal, Canada

Channeling Studies of Lattice Defects Controlled by Hyperfine Interaction. G. Lindner, K. Bendel, M. Deicher, E. Recknagel, and Th. Wichert, Fakultät für Physik, Universität Konstanz, 7750 Konstanz, Germany

Geometrical Structure of Lattice Defect-Impurity Configurations Determined by TDPAC. M. Deicher, O. Echt, E. Recknagel, and Th. Wichert, Fakultät für Physik, Universität Konstanz, 7750 Konstanz, Germany

TDPAC Studies of Electric Field Gradients in Amorphous
Metallic Systems, P. Heubes, D. Korn, G. Schatz, and G. Zibold, Fakultät für Physik, Universität Konstanz, 7750 Konstanz, Germany

NMR Investigation of Lithium Intercalated Lamellar Compounds. Y. Chabre, C. Berthier and P. Segransan, Laboratoire de Spectrometrie Physique, Grenoble, France

Microstructural Chemistry Changes During Two Phase Tempering; A Mossbauer Study of Hyperfine Fields in Fe-9% Ni Steel. B. Fultz and J. W. Morris, Jr., Materials and Molecular Research Division, Lawrence Berkeley Laboratory and Dept. of Materials Science & Mineral Engineering, University of California, Berkeley, CA 94720

A Mossbauer Study of the Amorphous System \((Fe_{x}Ni_{1-x})Fe_{16}B_{8}Al_{13}\). S. Bjurman and R. Wappling, Institute of Physics, Uppsala University, Uppsala, Sweden and K. V. Rao, Department of Physics, University of Illinois at Urbana, Urbana, IL 61801

Isothermal Recovery of a Quenched AG Foil. M. Bahr, C. Alonso Arias, A. Filewich, G. Garcia Bermudez, Department of Physics, Comision Nacional de Energia Atomica, Buenos Aires, Argentina

Study of Internal Motion in Materials by Means of Direct Observation of Relaxation Resonances in NMR (NMRRR). L. Van Gerven and P. Coppens, Laboratorium voor Vaste Stof-Fysika en Magnetisme, Katholieke Universiteit Leuven, Belgium

\(^{57}\text{Fe} \) and \(^{125}\text{Te} Mossbauer Study of LiFeNi\text{TeO}_5\) and LiFeCo\text{TeO}_5. A. Gerard, F. Grandjean and C. Flebus, Institute of Physics, University of Liege, Belgium

Proton NMR Studies of Amorphous Plasma-Deposited Films. Jeffrey A. Reimer, Robert W. Vaughan, and John C. Knights, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA 91125

Nuclear Magnetic Resonance on Rare Earth Nuclei in \(RE-Fe_2\) Intermetallic Compounds. Y. Berthier, Laboratoire de Spectrometrie Physique, Grenoble, France; R. A. B. Devine, Physics Department, University of Miami, Coral Gables, FL 33124; and R. Butera, Department of Chemistry, University of Pittsburgh, Pittsburgh, PA 15260

Mossbauer Study of Bed-Moist and Ion-Exchanged Victorian Brown Coal. J. D. Cashion, P. E. Clark, P. Cook, F. P. Larkins, M. Marshall, B. Maguire, Monash University, Clayton, Victoria, Australia; L. T. Kiss, S. E. C. Herman Research Labs, Richmond, Victoria, Australia

Mossbauer Effect Investigation of the Properties of Ternary Hydrides. P. J. Viccaro, D. Niarchos, G. K. Shenoy, B. D. Dunlap, Argonne National Laboratory, Argonne, IL 60439

Mossbauer Effect Study of Superconductivity and Magnetism in the Series \(R_2Fe_8Si_6\). J. D. Cashion, G. K. Shenoy, D. Niarchos, P. J. Viccaro, Charles M. Falco, and A. T. Aldred, Argonne National Laboratory, Argonne, IL 60439

Silicide Formation at Fe-Si Interfaces Studied by Mossbauer Spectroscopy and Rutherford Backscattering. R. L. Cohen, L. C. Feldman and K. W. West, Bell Laboratories, Murray Hill, NJ 07974
EPR Investigations of Impurities in the Lanthanide Orthophosphates. M. M. Abraham, L. A. Boatner, and M. Rasera, Department of Physics, Oregon State University Laboratory, Oak Ridge, TN 37830


μ⁴⁺ Hyperfine Interactions in Quartz Crystals. J. H. Brewer, D. P. Spencer, and D. G. Fleming, Departments of Physics and Chemistry, University of British Columbia and TRIUMF, Vancouver, B.C., Canada

SYMPOSIUM K
MAGNETIC AND OPTICAL MATERIALS FOR INFORMATION STORAGE

Chairman: Theodore Davidson
Xerox Webster Research Center
Webster, NY

November 18-20, 1980

SESSION K-1
MAGNETICS

Wednesday, November 19, 1980

9:00—Keynote Lecture: Information Storage: Magnetic, Optical, and Natural, G. Bate, Verbatim Corporation, Sunnyvale, CA

10:00—Metallic Particles: Preparation, Properties, and Information Storage Potential, J. E. French and S. J. Andreas, Hercules, Inc., Wilmington, DE


11:00—The Strength and Deformation of Magnetic Tape, Y. Shiraishi, A. Hirota, and K. Ashida, Victor Company of Japan, Yokohama, Japan

11:30—Environmental Expansion of Floppy Disk Media, S. M. Desai and K. Spitler, Shugart Associates, Sunnyvale, CA

2:00—Metallic Thin Film Media: Microstructure, Magnetic Properties, and the Limit of Recording Density, T. Chen, Xerox Palo Alto Research Center, Palo Alto, PA

2:30—Impact Wear of Thin NiCo Film on Magnetic Recording Disk Surface, T. F. Chen, Sperry University, Blue Bell, PA

3:00—Adsorption of Polymeric Functional Groups on Magnetic Particles, R. S. Haines, IBM, Boulder, CO
SESSION K-2
OPTICAL MATERIALS


4:30 — Antireflective Structures for Optical Disk, A. T. Ward, T. W. Smith, G. E. Johnson, and D. J. Luca, Xerox Webster Research Center, Webster, NY

Thursday, November 20, 1980

9:00 — Requirements for Optical Data Recording Media, Leonard J. Laub, Star Systems Division, Exxon Enterprises, Pasadena, CA

9:30 — Optical Recording Characteristics of Thin Films Cast from Colloids of Zero Valent Iron, T. W. Smith and A. T. Ward, Xerox Webster Research Center, Webster, NY

10:00 — High Density Optical Recording in Organic Films, Joseph J. Wrobel, Dennis G. Howe, Allan G. Marchant, and Harold T. Thomas, Kodak Research Laboratories, Rochester, NY

10:30 — Properties of Tellurium Films for Optical Storage, David Y. Lou and G. M. Blom, Philips Laboratories, Briarcliff Manor, NY

11:00 — Laser Writings on Tellurium Films, M. Chen, V. Marrello, W.-Y. Lee, IBM Research Laboratory, San Jose, CA

11:30 — Degradation of Thin Tellurium Films, Wen-Yaung Lee and Roy H. Geiss, IBM Research Laboratory, San Jose, CA

SYMPOSIUM L
ADVANCES IN CEMENT MATRIX COMPOSITES

Program Committee: D. M. Roy (Chairman)
A. J. Majumdar (co-Chairman)
S. P. Shah, J. A. Manson

November 17-18, 1980

A. Kelly — Fibre Reinforced Cements in Context

J. D. Birchall — The Nature and Role of the Matrix in Cement/Fibre Composites

A. J. Majumdar — Some Aspects of Glass Reinforced Cement Research

J. P. Skalny — Cement Hydration: An Overview

K. L. Litherland, D. R. Oakley, B. R. Proctor — The Use of Accelerated Ageing Procedures to Predict the Long Term Strength of GRC Composites

D. J. Pinchin, E. S. Flowers — Evaluation of Surface—Modified Asbestos

S. P. Shah — Fracture in Fiber Reinforced Concrete
D. J. Pinchin—Fibre-Cement Bond, Frictional Stress Transfer and Composite Properties: A Discussion

P. Bartos—Pullout Failure of Fibres Embedded in Cement-Based Matrices

P. E. Peterson—Fracture Mechanical Calculations and Tests for Fibre-Reinforced Cementitious Materials

H. Schorn, H. W. Vissmann—Complete Stress-Strain Relationship of Steel Fibre Reinforced Composites

Y. Tanigawa, K. Yamada, S. Hatanaka—Inelastic Behavior of Steel Fiber Reinforced Concrete Under Compression

R. H. Mills—Preferential Precipitation of Calcium Hydroxide On Alkali-Resistant Glass Fibres

R. N. Swamy—Prospects of Fibre Reinforcement in Structural Applications

D. J. Hannant—Polymer Fibre Reinforced Cement and Concrete

A. G. Tallentire—Scope of Applications for Glass Fibre Reinforced Cement in the Civil Engineering Materials Industry

B. P. Hughes—AGRC Composites for Thin Structural Sections

K. D. Raithby, J. W. Galloway, R. I. T. Williams—Potential Uses of Polypropylene-Reinforced Cement and Concrete as Surface Reinforcement for Concrete Structures

R. H. Mills—Age Embrittlement of Glass-Reinforced Concrete Containing Blastfurnace Slag

J. A. Manson—New Developments in Polymer Concrete Systems

T. Sugama, L. E. Kukacka—The Cross-Linking and Catalytic Effects of Ca$^{2+}$ Released from Cement on the Properties of Unsaturated Polyester and Resorcinol Phenol-Formaldehyde Polymer Concrete

J. Bijen—Glass Fibre Reinforced Cement; Improvements by Polymer Additions

D. J. Cook—Natural Fibre Reinforced Concrete and Cement: Recent Developments

R. M. L. Foote, B. Cotterell, Y. W. Mai—Crack Growth Resistance Curve for a Cement Composite (asbestos-cellulose)

Y. Ohama, H. Azaki—Basic Properties of Paraffin-Modified Mortar

S. Popovics—Composite Averages for the Estimation of Moduli of Elasticity of Composite Materials
SESSION M-1
SEMICONDUCTORS
(Joint Session with Symposium C —
Semiconductor Interfaces)
Chairman: L. L. Chang, IBM, T. J. Watson Research Center
Tuesday, November 18, 1980

2:00—Growth and Properties of Periodically Modulated
Semiconductor Structures — Superlattices, Chin-An
Chang, IBM T. J. Watson Research Center, Yorktown
Heights, NY

2:25—Doping Modulation of Semiconductor Structures,
A. C. Gossard, C. L. Allyn and W. Wiegmann, Bell Labs.,
Murray Hill, NJ

2:50—Electronic Structure and Properties of Modulated
Semiconductor Structures, A. Madhukar, University of
Southern California, Los Angeles, CA

3:15—Light Scattering by Carriers in Modulation Doped
Superlattices, A. Pinczuk and J. M. Worlock, Bell Labs,
Holmdel, NJ, and H. L. Stormer, R. Dingie, A. C. Gos-
sard and W. Wiegmann, Bell Labs, Murray Hill, NJ

3:35—BREAK

3:50—Electronic Structure of Idealized Si/SiO₂ Super-
lattices and Interfaces, Frank Herman and Douglas J.
Henderson, IBM Research Lab, San Jose, CA, and
Robert V. Kasowski, Central Research and Develop-
ment Dept., E. I. du Pont de Nemours Co., Wilmington,
DE

4:10—The Growth of Silicon Doping Modulated Super-
lattices, T. de Jong, V. Korabiev, L. Smit and F. W.
Saris, FOM-Institute for Atomic and Molecular Physics,
Amsterdam, Netherlands

4:30—Crystal Structures of Al on GaAs(100) by Molecu-
lar Beam Epitaxy, G. Landgren, R. Ludeke and L. L.
Chang, IBM T. J. Watson Research Center, Yorktown
Heights, NY

4:50—Bonding of Column III and V Adatoms on GaAs
(110) in Relation to Molecular Beam Epitaxy, P. Skeath,
C. Y. Su, I. Lindau and W. E. Spicer, Stanford Univer-
sity, Stanford, CA

SESSION M-2
METALS
Chairmen: F. Spaepen, Harvard University, Cambridge, MA
B. C. Giessen, Northeastern University, Boston, MA
Wednesday, November 19, 1980

9:00—Synthesis and Structure of Layered Synthetic
Microstructures, T. R. Barbee, Center for Materials
Research, Stanford University, Stanford, CA (invited)
9:30—Properties of Superconducting Layered Composites, M. R. Beasley, Stanford University, Stanford, CA (invited)

10:00—Structure and Properties of Modulated Films, R. H. Willens, L. R. Testardi, E. M. Gyorgy, J. F. Dillon, S. Nakahara, and D. B. McWhan, Bell Laboratories, Murray Hill, NJ

10:30—Mechanical, Magnetic and Superconducting Properties of Some Artificial Modulated Metals, J. E. Hilliard, Northwestern University, Evanston, IL (invited)

11:00—Interdiffusion in Compositionally Modulated Amorphous Metals Films, M. P. Rosenblum, Xerox PARC, Palo Alto, CA, and F. Spaepen, Division of Applied Sciences, Harvard University, Cambridge, MA

11:20—Magnetization and Mossbauer Study of Compositionally Modulated Pd-Fe, Cu-Fe and Amorphous Pd_85Si_15-Fe_80B_20 Films, G. Dublon and M. P. Rosenblum, McKay Lab, Harvard University, and W. T. Vettering, Lyman Lab, Harvard University, Cambridge, MA

11:40—Preparation of Compositionally Modulated Metals and Alloys by Electrodeposition From Solution, D. J. Churella, C. L. Tsai and B. C. Giessen, Institute of Chemical Analysis and Department of Chemistry, Northeastern University, Boston, MA

12:00—LUNCH

SESSION M-3

ROUND TABLE DISCUSSION

Chairmen: L. L. Chang, IBM Research Center, Yorktown Heights, NY
B. C. Giessen, Northeastern University, Boston, MA
F. Spaepen, Harvard University, Cambridge, MA

Wednesday, November 19, 1980

2:00—4:00

PANEL:

T. R. Barbee, Stanford University, Stanford, CA
M. R. Beasley, Stanford University, Stanford, CA
C. A. Chang, IBM Research Center, Yorktown Heights, NY
A. C. Gossard, Bell Laboratories, Murray Hill, NJ
J. E. Hilliard, Northwestern University, Evanston, IL
A. Madhuskar, University of Southern California, Los Angeles, CA
R. H. Willens, Bell Telephone Labs., Murray Hill, NJ
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# Activities Locator

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**VON HIPPEL AWARD RECEPTION — Wine and Cheese**

Ballroom 5:30-7:30

**LOBBY**

Daily 8:00 a.m. to 5:00 p.m.
**REGISTRATION FORM**

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  - $15 (1980)
  - $25 Both years
  - $5 Student

**TOTAL**

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