THE MATERIALS RESEARCH SOCIETY

1981 ANNUAL MEETING

NOVEMBER 16 - 19
THE BOSTON PARK PLAZA HOTEL
BOSTON, MASSACHUSETTS

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**INSIDE VIEW OF BOSTON FOR SPOUSES**

If you've never taken your spouse to a conference, the annual meeting in Boston will be the ideal time and place. For spouses who like their tours guided, the following tours are available. Please check those tours which appeal to you so that tentative plans may be formulated to include the tours with the most interest shown.

- Historical Homes on Famous Beacon Hill
- Museum and Gallery Tour with Lunch
- Sightseeing Tour of Boston
- Science Museum and Planetarium Show
- Metropolitan Center and Symphony Hall
- John F. Kennedy Library
- Mass. State House and Boston City Hall
- Faneuil Hall and Quincy Market
- Cambridge: Harvard University and its Famous Museums
- Salem (The Witch City)
- Concord and Lexington
- Antiquing Spree
- Shopping Tours:
  - Newbury Street’s Fashionable Boutiques
  - Downtown, including Filenes Basement
  - Designer Shopping with Discount Prices

Prices range from $8.00 - $22.00 per Tour

Space is limited. Send this form with your registration to facilitate tour planning. Tours will be filled on a first come first served basis.
GENERAL INFORMATION

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 of $5.00, and it will speed you through the registration process. Registration will take place in the hotel mezzanine on Sunday evening from 6:00 to 10:00, and daily thereafter from 8:00 a.m. to 5:00 p.m. The registration fee for the 1981 meeting is $95.00, which includes a membership for one year in the Materials Research Society. Payment of the Registration Fee allows the participant to attend all symposia. The Registration Fee for all students is $40.00.

   **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:**
   **Regular $125.00; student $70.00.**

3. **Room Accommodation.** The host hotel, the Boston Park Plaza (617-426-2000), has reserved a block of rooms for meeting attendees (see reservation card attached). 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 the Materials Research Society meeting.

   Other hotels in the area include: Colonade Hotel (617-261-2800) and Copley Square Hotel and Motor Inn (617-536-9000) and the Copley Plaza (617-225-7654).

4. **Proceedings.** Symposia A, B, C, D, E, F, G, L and N intend to publish their proceedings individually in book form. Copies of the proceedings of Symposia A, B, C, E, F, G, L and N can be purchased by participants at the special conference rate of $15.00 for the first copy. Additional copies of the same proceedings or copies of proceedings from different symposia can be purchased at the rate of $30.00 per copy (see Registration Form in Centerfold). The Registration Fee for Symposium D ($125.00) includes one copy of the Symposium Proceedings. Proceedings of Symposia C and K will be published as special journal issues.

   **1981 ANNUAL MEETING**
   **PROGRAM CO-CHAIRMEN**

   C. W. White — Oak Ridge National Laboratory
   H. J. Leamy — Bell Laboratories
   P. A. Montano — West Virginia University
PLENARY SESSION
GLOBAL THEORIES OF MATERIAL PROPERTIES
November 16, 5:30 p.m.
East Ballroom

The growing wealth of data on materials demands correspondingly broader and more sophisticated theories of microscopic structure and its functional relation to material properties. During the last decade quantum and statistical theories have been developed which provide immediate contact with materials science on a global scale. While these theories cannot be regarded as substitutes for the sophistication attainable through decades of research in a special area, they do consolidate a vast range of experience in a way that can act as a useful guide to beginners entering a new field. The basic concept behind these global theories will be reviewed by each speaker from his own viewpoint; the materials discussed will include metallic alloys, semiconductors, and amorphous and glassy solids.

Chemical Bonding and Structural Diagrams
A. N. Bloch
Exxon Research and Engineering, Linden, NJ 07036

Chemical & Topological Models of Non-Crystalline Solids
J. C. Phillips
Bell Laboratories, Murray Hill, NJ 07974
SESSION I.
FUNDAMENTAL MECHANISMS

Chairman: D. Turnbull, Harvard University
Monday Morning, November 16 – Georgian Room


9:00—“Synchrotron X-ray Study of the Structure of Silicon During Pulsed Laser Processing, B. C. Larson, Oak Ridge National Laboratory, Oak Ridge, TN

9:30—Silicon Melts During Pulsed Laser Annealing, B. Stritzker, A. Popielczyk and J. A. Tagle, Institut fur Festkorperforschung, KFA, Julich, FRG

9:45—Emission of Charged Particles from Laser Irradiated Silicon, J. M. Liu, R. Yen, H. Kurz and N. Bloembergen, Gordon McKay Laboratory, Harvard University, Cambridge, MA

10:00—Optical Properties of Si and GaAs Under Intense Laser Excitation: Evidence for a Self-Confined Plasma, A. Compaan, A. Aydinli, H. W. Lo and M. C. Lee, Kansas State University, Manhattan, KS

10:15—BREAK

10:30—“The Gentle Electronic Nature of Pulsed Beam Annealing, or Does It Really Go Superconducting? J. A. Van Vechten, IBM Thomas J. Watson Research Center, Yorktown Heights, NY

11:00—“Microstructural Model of Laser Annealing, J. C. Phillips, Bell Laboratories, Murray Hill, NJ

11:30—Nonlinear Dynamic Temperature Characterization of High Power Laser Annealed Semiconductor Material, D. L. Kwong, Dae M. Kim, Rajiv R. Shah and D. L. Crotwell, Rice University, Houston, TX

11:45—Time Resolved Optical Reflectivity During Pulsed Ruby Laser Annealing, M. O. Lampert, M. Toulemonde, R. Regal, M. Hage-Ali and P. Siffert, Centre de Recherches Nucléaires - Phase, Strasbourg, France

12:00—A Test for Non-Thermal Annealing of Si Using Pulsed Ion Beams, J. E. E. Beglin, W.-K. Chu, R. T. Hodgson, J. M. Neri and D. A. Hammer, IBM Thomas J. Watson Research Center, Yorktown Heights, NY

12:15—LUNCH

*Invited Talk
SESSION II.
FUNDAMENTAL MECHANISMS
Chairman: W. L. Brown, Bell Laboratories
Monday Afternoon, November 16 - Georgian Room

1:45—*Nonequilibrium Crystal Growth Resulting From Pulsed Laser Annealing, C. W. White, Oak Ridge National Laboratory, Oak Ridge, TN

2:15—Dynamics of Picosecond Laser Induced Phase Transformation in Silicon, R. Yen, J. Liu, H. Kurz and N. Bloembergen, Bell Laboratories, Holmdel, NJ and Harvard University, Cambridge, MA

2:30—Photoemission Results for Laser Annealed Si and Ge (111) Crystals, F. J. Himpsel, D. E. Eastman, P. Heimann, B. Reihl, C. W. White and D. M. Zehner, IBM Thomas J. Watson Research Center, Yorktown Heights, NY and Oak Ridge National Laboratory, Oak Ridge, TN

2:45—Determination of Oxygen in Laser Annealed/ Cleaned Silicon, Han Westendorp, Zhong-Lie Wang and Frans Saris, FOM Institute for Atomic and Molecular Physics, Amsterdam, The Netherlands

3:00—Phenomenon and Mechanism of Oxygen-Trapping and Oxidation Induced by Laser Irradiation in Silicon, Yung S. Liu, Shin-Wu Chiang, William Katz and Frederick Bacon, General Electric Company, Corporate Research and Development, Schenectady, NY


3:30—BREAK

3:45—*Computer Modelling of Laser Annealing, P. Baeri, Istituto di Struttura della Materia, Catania, Italy


5:00—Amorphous Germanium Crystallization Processes in Multi-Pulse Low Power Laser Irradiation, M. Bertolotti, G. Vitali, U. Zammit and M. Marinelli, Universita di Roma, Italy

*Invited Talk
SESSION III.
ELEMENTAL SEMICONDUCTORS

Chairmen: J. S. Williams, RMIT, Melbourne, Australia
T. Sedgwick, IBM Thomas J. Watson Research Center
Tuesday Morning, November 17 — Georgian Room

8:30—**Silicon Crystal Growth Phenomena at the Rapidly Moving Liquid-Solid Interface**, J. M. Poate, Bell Laboratories, Murray Hill, NJ


9:30—**Super saturated Solid Solution After Solid Phase Epitaxial Regrowth by Incoherent Light Scanning**, L. Pedulli and L. Correra, Istituto LAMEL, CNR, Bologna, Italy

9:45—**Laser Processing of UHV-Deposited Silicon Films on Si(100) and (110)**, T. de Jong, L. Smit, V. V. Korablev, D. D. Hoonhout and F. W. Saris, FOM Institute for Atomic and Molecular Physics, Amsterdam, The Netherlands

10:00—**Discharge Annealing of Ion Implanted Silicon**, C. Fieddermann, N. Ianno, J. T. Verdeny and B. G. Streetman, University of Illinois at Urbana-Champaign, Champaign, IL

10:15—**BREAK**


11:45—**Laser Induced Diffusion of Radioactive As Into Si**, Loren Pfeiffer, T. Kovacs, G. K. Celler, L. E. Trimble and D. C. Jacobson, Bell Laboratories, Murray Hill, NJ

12:00—**On the Influence of Laser Beam Homogeneity on the Regrowth of Ion-Implanted Si**, M. Wielenksi, J. Auleynter, A. Turos and D. Wieleniska, Polish Academy of Science, Warsaw, Poland
12:15—Pulse Electron Beam Annealing of Phosphorus Implanted Silicon, V. E. Borisenko and V. A. Labunov, Minsk Radioengineering Institute, Minsk, USSR

12:30—LUNCH

*Invited Talk

SESSION IV.
DEFECTS AND ANNEALING

Chairman: J. L. Merz, University of California, Santa Barbara

Tuesday Afternoon, November 17 — Georgian Room

1:45—*Extended Defects in Laser Crystallized Materials, A. G. Cullis, Royal Signals and Radar Establishment, Malvern, England

2:15—*Structural Modifications of Crystalline and Amorphous Silicon Induced by Picosecond Laser Pulses, G. A. Rozponty, H. Baumgart, F. Phillip, R. Uebbing and H. Oppolzer, Max Planck Institut fur Festkörperforschung, Stuttgart, FRG

2:30—Picosecond Laser Pulse Induced Damage in Crystalline Silicon, K. L. Merkle, R. Uebbing, H. Baumgart and F. Phillip, Max Planck Institut fur Festkörperforschung, Stuttgart, FRG

2:45—Defect Formation in CO₂ Laser Annealed Silicon, H. Baumgart, F. Phillip and H. J. Leamy, Bell Laboratories, Murray Hill, NJ and Max Planck Institut fur Festkörperforschung, Stuttgart, FRG


3:30—BREAK

3:45—Electronic Defects in Beam Crystallized Silicon, N. M. Johnson, Xerox Palo Alto Research Centers, Palo Alto, CA

4:00—Correlated Electrical and Microstructural Studies of Recrystallized Silicon Thin Films on Glass Substrates, D. K. Biegelsen, N. M. Johnson and M. D. Moyer, Xerox Palo Alto Research Centers, Palo Alto, CA

4:15—Quenched-In Defects in CW Laser-Annealed Si, N. H. Sheng and J. L. Merz, University of California, Santa Barbara, CA


4:45—Residual Defects in Virgin and Implanted Si After Laser Processing, A. Mesli, E. Butting, A. Goltzene, J. C. Muller, J. P. Ponpon, B. Meyer, C. Schwab and P. Siffert, Universite Louis Pasteur and CNRS, Strasbourg, France
SESSION V.  
ION IMPLANTATION AND PULSED BEAM ANNEALING  
(Joint Session with Symposium E)

Chairmen:
F. W. Saris, FOM Institute for Atomic and Molecular Physics, Amsterdam
W. K. Chu, IBM General Technology Division, Hopewell Junction

Wednesday Morning, November 18 – Georgian Room

8:30—“Pulsed Ion Beam Annealing, John E. E. Baglin, IBM Thomas J. Watson Research Center, Yorktown Heights, NY

9:00—Defect Analysis of Si Irradiated by Pulsed Ion Beam, S. R. Mader and W. K. Chu, IBM General Technology Division, Hopewell Junction, NY


9:30—“Metallurgy and Microstructures of Pulse-Melted Alloys, David M. Follstaedt, Sandia National Laboratories, Albuquerque, NM

10:00—BREAK

10:15—“Superconducting Effects in Rapidly Quenched Materials Formed by Ion and Laser Bombardment, B. Stritzker, Institut fur Festkorpelforschung, KFA, Julich, FRG


11:00—Thermal Stability of Metastable Phases Produced by Laser Treatment of Aluminum Implanted with Cr and Mo, G. Battaglin, A. Carrera, G. Della Mea, P. Mazzoldi, Animesh K. Jain, V. N. Kulkarni and D. K. Sood, Universita di Padova, Padova, Italy and Bhabha Atomic Research Centre, Bombay, India


11:30—Pulsed Laser Annealing of Ni, and MgO Containing Ni Precipitates, J. Narayan, Oak Ridge National Laboratory, Oak Ridge, TN

Carnera, G. Della Mea, P. Mazzoldi, Animesh K. Jain, V. N. Kulkarni and D. K. Sood, Universita di Padova, Padova, Italy and Bhabha Atomic Research Centre, Bombay, India

12:00—Pulsed Electron Beam Melting of Fe, J. A. Knapp and D. M. Foltaad, Sandia National Laboratories, Albuquerque, NM

12:15— LUNCH

*Invited Talk

SESSION VI.
DEPOSITED LAYERS

Chairman: T. W. Sigmon, Stanford Electronics Laboratory, Stanford

Wednesday Afternoon, November 18 — Georgian Room

1:45— "Laser Fabrication of Si on Dielectric Substrates, H. J. Leamy, Bell Laboratories, Murray Hill, NJ

2:15—Transient Heating with Graphite Heaters for Semiconductor Processing, John C. C. Fan, Bor-Yeu Tsaur and Michael W. Geis, MIT Lincoln Laboratory, Lexington, MA


2:45—Green's Function Solution of the Heat Equation for Beam Interactions with Multilayer Structures, Mark L. Burgener, Ozzie Csanadi and Ronald E. Reedy, Naval Ocean Systems Center, San Diego, CA

3:00—Model for cw Laser Annealing of Multilayer Structures, I. D. Calder and R. S. Sue, Bell Northern Research, Ontario, Canada


3:30— BREAK

3:45—The Use of Beam Shaping to Achieve Large Grain CW Laser Recrystallized Polysilicon on Amorphous Substrates, T. J. Stultz and J. F. Gibbons, Lockheed Palo Alto Research Laboratories and Stanford University, Stanford, CA

4:00—Seeded Growth of Si over SiO2 Substrates by CW Laser Irradiation, L. E. Trimble, K. K. Ng, G. K. Celler, H. Baumgart and H. J. Leamy, Bell Laboratories, Murray Hill, NJ

4:15—Fast Scan Laser Annealing, John T. Schott, Sperry Research Center, Sudbury, MA


4:45—Characteristics of Interpoly Oxides, Optimized by Conventional Processing and Laser Annealing, H. D.
SESSION VII.
COMPUND SEMICONDUCTORS

Chairmen:
F. H. Eisen, Rockwell International Electronics Research Center
B. G. Streetham, University of Illinois, Urbana-Champaign

Wednesday Evening, November 18 - Georgian Room

8:00—*Material-Process Interactions in the Annealing of GaAs, C. Lawrence Anderson, Hughes Research Laboratories, Malibu, CA

8:30—Non Alloyed Ohmic Contacts for GaAs Coplanar Mixer Diodes, John M. Woodcock, Philips Research Laboratories, Surrey, England


9:00—Studies of Laser Annealed GaAs (100), (110) and (111) Surfaces, D. M. Zeher, C. W. White, G. W. Ownby and B. R. Appletton, Oak Ridge National Laboratory, Oak Ridge, TN

9:15—Photoluminescence of Pulsed Ruby Laser Annealed Crystalline and Ion Implanted GaAs, Douglas H. Lowndes and Bernard J. Feldman, Oak Ridge National Laboratory, Oak Ridge, TN and University of Missouri, St. Louis, MO

9:30—Multiscanned Electron Beam Annealing of Si-Implanted GaAs, M. Bujatti, A. Cetronio, R. Nipoti and E. Olzi, Selenia, S.p.A., Rome, Italy, and CNR-Istituto LAMEL, Bologna, Italy

9:45—BREAK


10:30—Compositional Analysis and Electrical Property Measurements of CW Laser Annealed InSb, Yung S. Liu, Ching-Yeu Wei, Wirojana Tantraporn, Shin-Wu Chiang and George E. Possin, General Electric Company, Schenectady, NY
SESSION VIII.
DEPOSITED LAYERS, METALS
AND SILICIDES

Chairman: J. C. C. Fan, MIT Lincoln Laboratory
Thursday Morning, November 19 — Georgian Room

8:30—*Beam Recrystallized Silicon-on-Insulator Devices,
H. W. Lam, Texas Instruments, Inc., Dallas, TX

9:00—Grain Enlargement in Polysilicon on Insulating Substrates Induced by Q-Switched Nd-YAG Laser Irradiation, R. J. Falster, G. E. J. Eggermont and J. F. Gibbons, Quantronix Corporation, Smithtown, NY, Philips Research Laboratories, Sunnyvale, CA and Stanford Electronics Laboratories, Stanford, CA

9:15—Optical, Structural and Electrical Characteristics of Explosively Crystallized Si Thin Films on Glass Substrates, G. Auvert, A. Perio and F. Morin, CNET, Grenoble, France

9:30—Laser and Electron Beam Induced Explosive Crystallization of a-Si on Silicon Substrates, M. Lerme, T. Ternisien, D. P. Vu and V. T. Nguyen, CNET, Grenoble, France

9:45—Uniform and Directed Crystallization of Deposited a-Si on Glass Substrates at Linear Velocities of 1 to 20 Meters Per Second, D. Bensshel and G. A. Rozgonyi, CNET, Grenoble, France

10:00—BREAK

10:15—CW Laser Melting of Ni-Si and Co-Si Films Evaporated on Fused Quartz, M. A. Bosch, A. H. Dayem, T. R. Harrison and R. A. Lemons, Bell Laboratories, Holmdel, NJ

10:30—Interplay of Thermally Assisted and Normal Impurity Diffusion During Laser vs. Electron Beam Heat Flow Transients in Metals, L. F. Dona dalle Rose and M. Miotello, Unitat GNSM-CNR, Padova, Italy and Istituto per la Ricerca Scientifica e Tecnologica, Povo, Italy

10:45—Epitaxial Silicide Formation by Scanning Electron Beam Annealing, H. Ishiwa and H. Yamamoto, Tokyo Institute of Technology, Yokohama, Japan

11:00—Study of Titanium and Nickel Silicide Formation by Q-Switched Laser and Multi-Scanning E-Beam, G. G. Bentini, R. Nipoti, M. Servidori, C. Cohen and A. V. Drigo, CNR Istituto LAMEL, Bologna, Italy

SESSION IX.
DEVICE APPLICATIONS

Chairmen:
L. D. Hass, Hughes Research Laboratories
C. Hill, Plessey Research Ltd.

Thursday Afternoon, November 19 — Georgian Room


2:15—Shaping of Dopant Concentration Profiles in Silicon by Multiple Pulse Laser Processing, C. Hill, A. L. Butler and J. Daly, Plessey Research (Caswell) Ltd., Towcester, England

2:30—Laser-Assisted MOS/SOS Device Fabrication, L. D. Hess, S. A. Kokorowski, G. L. Olson, Y. M. Chi, A. Gupta and J. B. Valdez, Hughes Research Laboratories, Malibu, CA and Hughes Newport Beach Research Center, Newport Beach, CA

2:45—Schottky-Diodes in Laser Recrystallized Polysilicon, H. Schaber, H. Schelpmeier, W. M. Werner and D. Cutter, Siemens AG, Munchen, FRG


3:30— BREAK

3:45—*Beam Processing of Silicon with Large Diameter CW Sources, James F. Gibbons, Stanford Electronics Laboratories, Stanford University, Stanford, CA

4:15—Optimised Multi-Scan E-Beam Annealing of Boron Implants in MOS Device Processing, A. E. Glaccum, C. J. Pollard and J. D. Speight, British Telecom Laboratories, Suffolk, England

4:30—Pulsed Electron Beam Processing of Silicon, A. C. Greenwald, R. G. Wolfson and R. G. Little, Spire Corporation, Bedford, MA

4:45—Silicon-On-Insulator MOSFETs on Zone-Melting Recrystallized Poly-Si Films on SiO2, B. Y. Tsaun, M. W. Geis, John C. C. Fan, D. J. Silversmith and R. W. Mountain, MIT, Lexington, MA
SYMPOSIUM B
GRAIN BOUNDARIES IN SEMICONDUCTORS

Chairmen:
C. H. Seager, Sandia Laboratories
G. E. Pike, Sandia Laboratories
H. J. Leamy, Bell Laboratories

November 16-19, 1981

SESSION B-1
STRUCTURAL PROPERTIES
Monday Morning, November 16 — Ballroom West
Chairman: W. D. Kingery, MIT, Cambridge, MA

7:55- 8:00—Introductory Remarks: G. Pike, Sandia National Laboratories, Albuquerque, NM

8:00- 8:50—Characterization of Grain Boundaries in Electronic Ceramics by Electron Microscopy (Invited), D. R. Clarke, Rockwell International Science Center, Thousand Oaks, CA

8:50- 9:05—Experimental Study of the Relative Energy of Symmetrical \(<110>\) Tilt Boundaries in a Semi-Conducting F.C.C. Oxide (NiO), A. Revcolevschi, M. Dechamps and G. Dhalenne, Laboratoire de Chimie Appliquee, Universite Paris XI, Orsay, France


9:50-10:05—Structure of Twin Boundaries in Silicon, C. Fontaine and D. A. Smith, IBM T. J. Watson Research Center, Yorktown Heights, NY

10:05-10:20 — BREAK

10:20-10:35—Silicon Twin Boundaries: Structure and Internal Defects, Andre Rocher, Christianne Dianzelli, Laboratoire d’Optique Electronique du CNRS, Toulouse, France; and Mongi Labidi, Universite de Tunis, Tunisia

SESSION B-2
ELECTRICAL PROPERTIES

Monday Afternoon, November 16 — Ballroom West

Chairman: S. J. Fonash, Pennsylvania State University, University Park, PA

1:30-1:35 — Introductory Remarks and Announcements


2:25-2:40 — Transport Across Silicon Grain Boundaries, J. Werner, W. Jantsch and H. J. Queisser, Max-Planck-Institut für Festkörperforschung, Stuttgart, West Germany


3:10-3:25 — Direct Measurement of the Density and the Capture Cross Section of Grain Boundary States in Germanium, A. Broniatowski, Laboratoire P.M.T.M., France, and J. C. Bourgoin, Laboratoire de Physique des Solides de l'E.N.S., Université Paris VII, Paris, France

3:25-3:40 — BREAK

3:40-3:55 — Characterization of Grain Boundaries in Polycrystalline GaAs, Michael G. Spencer, Howard University, Washington, D.C., and D. Ken Wagner, Cornell University, Ithaca, NY

4:40-4:55—A Study of the Electrical Activity of Arsenic on the Si(100) Surface, S. C. Perino and C. R. Helms, Stanford University, Stanford, CA

SESSION B-3
SOLAR CELLS — I

Tuesday Morning, November 17 — Ballroom West
Chairman: A. Heller, Bell Laboratories, Murray Hill, NJ

8:00- 8:05—Introductory Remarks and Announcements


9:45-10:35—Hydrogen Passivation in Polycrystalline Silicon (Invited), B. Faughnan, RCA Laboratories, Princeton, NJ

10:35-10:50 — BREAK


11:05-11:20—Influence of Carbon and Hydrogen Segregation on the Electrical Properties of Grain Boundaries in Polycrystalline Silicon Shears, Ottilia Rallon, Marc Aucouturier, Laboratoire de Metallurgie Physique, Universite Paris-Sud, France; C. Texier-Hervo, M. Mautref, C. Belouet, Laboratoire de Marcoussis, CGE, Marcoussis, France


SESSION B-4
SOLAR CELLS — II
Wednesday Morning, November 18 — Parlor A
Chairman: R. Wood, Oak Ridge National Laboratory, Oak Ridge, TN

8:30- 8:35—Introductory Remarks and Announcements
8:35- 9:25—Effects of Grain Boundaries in GaAs Solar Cells (Invited), A. E. Blakeslee, Solar Energy Research Institute, Golden, CO
9:25-10:15—Chemical Control of Electron Hole Recombination at Grain Boundaries on n-GaAs and p-InP (Invited), Adam Heller, Bell Laboratories, Murray Hill, NJ
10:15-10:30—High-Spatial-Resolution Diffusion Length Measurements in Polycrystalline GaAs, Robert Fletcher, D. Ken Wagner and Joseph M. Ballantyne, Cornell University, Ithaca, NY
10:30-10:45— BREAK
10:45-11:00—Charge Collection Characterization of Polycrystalline n-GaAs Layers for Solar Cells, O. Paz, IBM East Fishkill, Hopewell Junction, NY; K. N. Bhat and J. M. Borrego, Rensselaer Polytechnic Institute, Troy, NY
11:00-11:15—Grain Boundary Passivation and Analysis for Solar Cell Applications, V. J. Rao, W. A. Anderson and F. K. Kai, State University of New York at Buffalo, Amherst, NY

SESSION B-5
MICROELECTRONICS — I
Wednesday Afternoon, November 18 — Parlor A

1:00-1:05—Introductory Remarks and Announcements
1:05-1:55—Potential Applications of Poly-Silicon as an Electronic Device Material (Invited), D. Bartelink, Xerox Palo Alto Research Laboratory, Palo Alto, CA
1:55-2:45—Physical and Electrical Properties of Polycrystalline Silicon Thin Films (Invited), Krishna C. Saraswat, Stanford University, Stanford, CA
2:45-3:00— BREAK
3:00-3:50—Surface Mobilities in Laser Processed Polycrystalline Silicon Thin Films (Invited), R. C. Frye and K. K. Ng, Bell Laboratories, Murray Hill, NJ
4:40-5:55—Grain Boundary Dominated Conductivity in Polycrystalline Semiconductor Thin Film Transistors, J. Levinson, F. R. Shepherd, and W. D. Westwood, Bell-Northern Research, Ottawa, Canada
SESSION B-6
MICROELECTRONICS – II
Wednesday Evening, November 18 – Parlor A
Chairman: H. J. Leamy, Bell Laboratories, Murray Hill, NJ

7:25- 7:30—Introductory Remarks and Announcements

7:30- 8:20—Polycrystalline Silicon Resistors: Theory, Technology Applications, and Limitations (Invited), Levy Gerzberg, Nicky C. C. Lu and James D. Meindl, Integrated Circuits Laboratory, Stanford University, Stanford, CA

8:20- 9:10—Mosfet Operation in Small-Grain Polysilicon (Invited), Steven W. Depp, B. G. Huth, A. Juliana, and R. W. Koepcke, IBM Research Laboratory, San Jose, CA


9:55-10:10—Laser Recrystallization of Poly Si on SiO2 for High Performance Resistors, Rajiv R. Shah, D. Randy Hollingsworth, and D. Lloyd Crotchwait, Texas Instruments Inc., Dallas, TX

SESSION B-7
ELECTRONIC CERAMIC DEVICES – I
Thursday Morning, November 19 – Parlor A
Chairman: Tapan K. Gupta, Westinghouse R&D, Pittsburgh, PA

8:30- 8:35—Introductory Remarks and Announcements

8:35- 9:25—Zinc Oxide Varistors - An Overview (Invited), Lionel M. Levinson, General Electric Company, Schenectady, NY

9:25-10:15—Theory of ZnO Varistors (Invited), G. D. Mahan, Indiana University, Bloomington, IN

10:15-10:30— BREAK

10:30-11:20—Grain Boundary Phenomena in ZnO Varistors (Invited), R. Einzinger, Siemens AG Research Laboratories, Munich, West Germany


11:35-11:50—Effects of Surface Layer Defects and Adsorbed Oxygen on TiO2 - Rutile Schottky Barriers, Mark Levinson, Bell Laboratories, Murray Hill, NJ

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SESSION B-8
ELECTRONIC CERAMIC DEVICES – II
Thursday Afternoon, November 19 – Parlor A
Chairman: H. R. Philipp, General Electric R&D,
Schenectady, NY

1:45-1:50—Introductory Remarks and Announcements
1:50-2:40—Electronic Properties of ZnO Varistors (Invited), G. E. Pike, Sandia National Laboratories, Albuquerque, NM
2:40-3:30—Electrical Properties of ZnO-Bi2O3 Oxide Heterojunction (Invited), Kazuo Eda, Matsushita Electric Industrial Co., Ltd. Wireless Research Laboratory, Osaka, Japan
3:30-3:45—BREAK
3:45-4:00—Prebreakdown Current-Voltage Analysis of Potential Barriers in ZnO Varistor Compositions, Michel Graciet and Francoise Buchy, Laboratoire Central de Recherches, Thompson-CSF, Orsay, France
4:00-4:15—Metastable Barrier Voltage in ZnO Varistors, T. K. Gupta, B. O. Hall and W. G. Carlson, Westinghouse Research and Development Center, Pittsburgh, PA
4:15-4:30—Degradation of Zinc Oxide Varistors, Ken Takehashi, T. Miyoshi, K. Maeda, T. Yamazaki, and S. Ohwada, Hitachi Ibaraki-ken, Japan
4:30-4:45—Thermal Runaway in Metal Oxide Varistors, Martin A. Seitz and Richard Hirthe, Marquette University, Milwaukee, WI and M. E. Potter, McGraw-Edison Co., Franklinville, WI
4:45-5:00—Electrical Conductivity Characteristics of Internal Boundary Layer Capacitors, S. B. Desu, C.T.A. Suchizital and D. A. Payne, University of Illinois at Urbana-Champaign, Urbana, IL

SYMPOSIUM C
THIN FILMS AND INTERFACES
Chairman: P. S. Ho and K. N. Tu
IBM T. J. Watson Research Center, Yorktown Heights, NY

November 17-19, 1981

SESSION C-1
METAL-SEMICONDUCTOR INTERFACES
Tuesday Morning, November 17 – Parlor C
Chairman:
J. Blakely, Cornell University, Ithaca, NY
P. S. Ho, IBM T. J. Watson Research Center,
Yorktown Heights, NY

9:00—*Microscopic Theory of Metal-Semiconductor Interfaces, M. Schluter, Bell Laboratories, Murray Hill, NJ
9:40—*Electronic Structure of Silicide/Si Interfaces, G. W. Rubloff and P. S. Ho, IBM T. J. Watson Research Center,
Yorktown Heights, NY
10:20—BREAK

10:40—**Atomic Views of the Behaviors of Single Silicon Atoms on Metal Surfaces, T. T. Tsong, The Pennsylvania State University, University Park, PA

11:20—Atomic Interdiffusion, Chemical Reaction, and Barrier Formation at Metal-Compound Semiconductor Interfaces, C. F. Brucker and L. J. Brillson, Xerox Webster Research Center, Webster, NY

11:40—Low-temperature Intermixing Reactions Between Silicon and Metals, A. Hiraki, Osaka University, Osaka, Japan

*Invited Talk

SESSION C-2
SILICIDE-Si INTERFACES
Tuesday afternoon, November 17 — Parlor C

Chairman:
S. Mader, IBM General Tech. Div., E. Fishkill, NY
C. M. Wayman, University of Illinois, Urbana, IL

2:00—**Epitaxial Growth of Silicides, J. M. Poate, J. C. Bean, J. M. Gibson, D. C. Jacobson and R. T. Tung, Bell Laboratories, Murray Hill, NJ


3:00—The Effects of Nucleation and Growth on Epitaxy in the CoSi2/Si System, J. C. Bean, J. M. Gibson, J. M. Poate and R. T. Tung, Bell Laboratories, Murray Hill, NJ

3:20—BREAK

3:40—Analysis of High Resolution Electron Microscope Images of the Pd3Si/Si Interface, W. Krakow, D. A. Smith, IBM T. J. Watson Research Center, Yorktown Heights, NY and D. Cherns, Oxford University, Oxford, England

4:00—CrSi2, ZrSi2 and TiSi2 Formation Studied by a Radioactive 31Si Marker Technique, A. P. Botha and R. Pretorius, Southern Universities Nuclear Institute, Faure, South Africa


4:40—An Epitaxial Si/Insulator/Si Structure by Vacuum Deposition of CaF2 and Si, T. Asano, Tokyo Institute of Technology, Yokohama, Japan

*Invited Talk
SESSION C-3
INTERFACE ANALYSIS AND CHARACTERIZATION
Wednesday Morning, November 18 – Parlor C
Chairmen:
J. E. E. Baglin, IBM T. J. Watson Research Center,
Yorktown Heights, NY
S. S. Lau, University of California at San Diego,
La Jolla, CA

9:00—*Ion-Beam Crystallography of Interfaces, F. W.
Saris, FOM Institute for Atomic and Molecular Physics,
Amsterdam, The Netherlands

9:40—Defects at the Ge/Si Interface, D. K. Sadana, J.
Washburn, University of California, Berkeley, CA.,
M. Maenpaa, T. F. Kuech, California Institute of Tech-
nology, Pasadena, CA, and S. S. Lau, University of Cal-
fornia at San Diego, La Jolla, CA

10:00—Effects of Electrically Active Impurities on Epi-
taxial Regrowth Rate of Amorphized Si and Ge, I.
Suni, G. Goltz, and M.-A. Nicolet, California Institute
of Technology, Pasadena, CA, and S. S. Lau, University
of California at San Diego, La Jolla, CA

10:20—BREAK

10:40—Non-planar Solid Phase Epitaxial Growth Processes
in Ion Implanted GaAs, J. S. Williams, F. M. Adams, and
K. G. Rossiter, Royal Melbourne Institute of Technol-
ogy, Melbourne, Australia

11:00—Dislocations as Growth Step Sources in Solution
Growth and Their Influence on Interface Structures, E.
Bauser and H. Strunk, Max-Planck-Institut Fur Metall-
fororschung, Stuttgart, West Germany

11:20—Characterization of Heterostructures in (Al, Ga) As
Double Heterostructures, V. Swaminathan, W. R.
Wagner, N. E. Schumaker and R. C. Miller, Bell Laborato-
tories, Murray Hill, NJ

11:40—In Situ X-ray Diffraction Study of the Interfacial
Processes Between Gold and Gallium Arsenide, Xian-
Fu Zeng, D. D. L. Chung, Carnegie-Mellon University,
Pittsburgh, PA

*Invited Talk

SESSION C-4
INTERFACE-RELATED THIN
FILM STUDIES
Wednesday Afternoon, November 18 – Parlor C
Chairmen:
U. Gosele, Max-Planck Institute, Stuttgart, Germany
M.-A. Nicolet, California Institute of Technology,
Pasadena, CA

2:00—*Analysis of Surface Structural Defects by Low-
energy Electron Diffraction, M. G. Lagally, D. G. Welkis,
T. M. Lu, and H. M. Clearfield, University of Wisconsin,
Madison, WI

2:40—The Direct Observation of Atomic Surface Struc-
ture and Inclined Planar Defects in (111) Au Films, W.
Krakow, IBM T. J. Watson Research Center, Yorktown
Heights, NY
3:00—Growth Kinetics of Nickel/Silicid in Studied by Radiotracer and Backscattering Techniques, J. E. E. Baglin, D. Gupta and H. Atwater, IBM T. J. Watson Research Center, Yorktown Heights, NY

3:20—BREAK

3:40—Comparison of the Three Classes (Rare Earth, Refractory and Near Noble) of Silicide Contacts, R. D. Thompson and K. N. Tu, IBM T. J. Watson Research Center, Yorktown Heights, NY

4:00—Differences Between the Growth Kinetics of Thin Film and Bulk Diffusion Couples, U. Gosele and K. N. Tu, IBM T. J. Watson Research Center, Yorktown Heights, NY

4:20—Sequence of Formation of Intermetallics and Grain Boundary Diffusion in Al-Cu and Al-Au Thin-Film Couples, J. M. Vandenberg, F. J. A. den Broeder, W. L. Brown and R. A. Hamm, Bell Laboratories, Murray Hill, NJ

4:40—Formation and Growth of Voids and/or Gas Bubbles in Thin Films, J. R. Lloyd, IBM, General Technology Div., E. Fishkill, NY, and S. Nakahara, Bell Laboratories, Murray Hill, NJ

*Invited Talk

SESSION C-5
THIN FILM APPLICATIONS IN MICROELECTRONICS I

Thursday Morning, November 19 — Parlor C

Chairmen:
W. Brown, Bell Laboratories, Murray Hill, NJ
J. Zemel, University of Pennsylvania, Philadelphia, PA

9:00—*Structure and Performance of Polycrystalline Thin-Film Solar Cells, E. S. Yang, Columbia University, NY


10:00—Electron-Beam Study of Silicide Schottky Diodes, H.-C. W. Huang, C. F. Aliotta and P. S. Ho, IBM T. J. Watson Research Center, Yorktown Heights, NY

10:20—BREAK

10:40—Interface State of Si MOSFET Studies by Dynamic Conductance and Noise Measurements and Effects of Bias Temperature Stresses, K. L. Ngai, Naval Research Laboratory, Washington, D. C.

11:00—Effects of Interface Structure on the Electrical Characteristics of PtSi-Si Schottky Barrier Contacts, B-Y Tsaun, D. J. Silversmith and R. W. Mountain, MIT, Lexington, MA

11:40—New Developments in Ion Implanted Furnace Annealed Silicon on Sapphire Films. E. D. Richmond and A. R. Knudson, Naval Research Laboratory, Washington, D.C.

*Invited Talk

SESSION C-6
THIN FILM APPLICATIONS IN MICROELECTRONICS II
Thursday Afternoon, November 19 – Parlor C

Chairmen:
G. Ottaviani, Institute of Physics, Modena, Italy
K. N. Tu, IBM T. J. Watson Research Center, Yorktown Heights, NY

2:00—*Silicide Applications in Microelectronics. B. L. Crowder, IBM T. J. Watson Research Center, Yorktown Heights, NY

2:40—*Metalization for Very Large Scale Integrated Circuits. P. B. Ghate, Texas Instruments, Inc., Dallas, TX

3:00—On the Role of Passivation Defects on Electromigration Induced Failure in Thin Films. J. R. Lloyd, IBM General Technology Div., E. Fishkill, NY

3:20—BREAK

4:00—Applications of TiN Thin Films in Si Device Technology. M. Wittmer and H. Melchior, Swiss Federal Institute of Technology, Zurich, Switzerland


*Invited Talk
SYMPOSIUM D
INTERNATIONAL SYMPOSIUM
ON THE SCIENTIFIC BASIS
FOR NUCLEAR WASTE
MANAGEMENT

Chairman:
Stephen V. Topp, Du Pont - Savannah River
Laboratory, Aiken, SC

November 16-19, 1981

ABOUT THE SYMPOSIUM

The purpose of this symposium is to provide an interdis-
ciplinary 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 wastes and their management. The pre-
sentations will emphasize scientific foundations underlying
such subject areas as:
- Treatment and disposal of non-high-level radioactive
  waste
- Waste-near-field interaction
- Waste form processing complexities at large scale
- Waste form 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, meta-
  mictization, 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 con-
ference.

PROGRAM COMMITTEE

S. V. Topp, Chairman, Du Pont - Savannah River Labora-
tory
L. A. Boatner, Oak Ridge National Laboratory
C. J. M. Northrup, Jr., Sandia National Laboratories
J. D. Tewhey, Jordan Gorill Associates
D. G. Brookins, University of New Mexico
C. M. Brown, Rockwell - Rocky Flats
W. A. Ross, Battelle Pacific Northwest Laboratory
J. G. Steger, Los Alamos Scientific Laboratory
J. Kircher, Office of Nuclear Waste Isolation
K. Wolfsberg, Los Alamos Scientific Laboratory

STEERING COMMITTEE

John A. Stone, Chairman, Savannah River Laboratory, USA
Claude Sombret, Commissariat a l'Energie Atomique, FRANCE
Session A

Chemical and Physical Properties of Waste Forms — Session I

Monday Morning, 8:15-12:15

Presiding: John A. Stone, Du Pont - Savannah River Laboratory and Peter Zuhlike, Federal Republic of Germany

8:15-8:30 Greeting and Opening Remarks - S. V. Topp

8:30-9:00 A1 - Invited Keynote Address: An Experimental Comparison of Alternative Solid Forms for Savannah River High Level Wastes, J. A. Stone, Du Pont - Savannah River Laboratory

9:00-9:20 A2 - Factors Affecting the Leach Rates of Perovskite and Sphene, G. M. Bancroft, J. Metson, H. W. Nesbitt, W. S. FYfe, and P. J. Hayward, Western Ontario University


9:40-10:00 A4 - Behavior of Titanate-Based Waste Forms in Aqueous Solutions, R. G. Dosch, Sandia National Laboratories

10:00-10:15 BREAK


SESSION B

GEOLeOIC AND GECOHEmICAL CONSIDERATIONS

Monday Afternoon, 1:30-5:00

Presiding: Kurt Wolfsberg, Los Alamos National Laboratory; Douglas G. Brookins, University of New Mexico; and Eva L. J. Rosinger, AECL, Whiteshell, Canada

1:40-2:00 B1 -The Use of 222Rn as a Flow Path Monitor for Studies of Radionuclide Transport in Fissures, J. Hines, D. Cohen, S. Friedman and A. M. Friedman, Argonne National Laboratory


2:40-3:00 B4 -Nuclide Migration Field Experiments in Tuff, G-Tunnel, Nevada Test Site, B. R. Erkel, R. S. Rundberg, K. Wolfsberg, Los Alamos National Laboratory; D. R. Fortney, K. L. Erickson, Sandia National Laboratories; A. M. Friedman, S. Fried, J. J. Hines, Argonne National Laboratory

3:00-3:15 BREAK

3:15-3:35 B5 -Predicting Pu Concentrations in Solutions Contacting Geologic Materials, R. G. Strickert and D. Rai, Battelle Pacific Northwest Laboratory

3:35-3:55 B6 -Transient Hydraulic Tests in Granite: Fractured Porous Medium Analysis and Results, J. H. Black and J. A. Barker, Harwell Laboratory, UK

3:55-4:15 B7 -A Natural Analogue for Storage of Radwaste in Crystalline Rocks, D. G. Brookins, M. S. Abashian, University of New Mexico; L. H. Cohen, University of California - Riverside; H. A. Wollenberg, Jr., Lawrence Berkeley Laboratory

4:15-4:35 B8 -Radionuclide Migration: Laboratory Experiments with Isolated Fractures, R. J. Rundberg, S. Maestas, Los Alamos National Laboratory; J. L. Thompson, Idaho State University

SESSION C
CANISTER, BACKFILL, AND NEAR-FIELD INTERACTIONS

Tuesday Morning, 8:15-12:00

Presiding: John Kircher, Office of Nuclear Waste Isolation, and Takehiko Ishihara, Radioactive Waste Management Center, Japan

8:20 - 8:40 C1 - Diffusion Measurements in Compacted Bentonite, B. Torstenfelt, K. Anderson, B. Allard and U. Olofsson, Chalmers University of Technology, Goteborg, Sweden

8:40 - 9:00 C2 - Dissolution of Simulated Spent Fuel in Hydrothermal Solutions, W. P. Freeborn, S. Komarneni, B. E. Scheetz and W. B. White, Pennsylvania State University

9:00 - 9:20 C3 - Migration Rates of Brine Inclusions in Single Crystals of NaCl, I-Ming Chou, U. S. Geological Survey


9:40 - 10:00 C5 - The Dissolution of Irradiated Fuel Under Hydrothermal Conditions, L. H. Johnson, AECL, Whiteshell, Canada

10:00 - 10:15 BREAK

10:15 - 10:35 C6 - Retardation, Permeability, and Swelling of Candidate Backfill Materials, J. H. Westaik, Jr., L. A. Bray, F. N. Hodges and E. J. Wheelwright, Battelle Pacific Northwest Laboratory

10:35 - 10:55 C7 - PNL-Sandia HLW Package Interactions Test: Phase One, M. A. Monecke, Sandia National Laboratories; D. J. Bradley and J. W. Shade, Battelle Pacific Northwest Laboratory


SESSION D
INVITED SPEAKERS ON OVERVIEW TOPICS

Tuesday Afternoon, 1:20-3:15

Presiding: John D. Tewhey, Jordan Gorrill Associates, and Claude Sombret, Atomic Energy Commission, France

1:20 - 1:40 D1 - ONWIL Overall Program and Scientific Requirements, J. Kircher, Office of Nuclear Waste Isolation

1:45 - 2:05 D2 - Materials Research for the Canadian Waste Management Program, D. J. Cameron, AECL, Whiteshell, Canada

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SESSION E
POSTER SESSION
GEOLOGIC, CANISTER, BACKFILL CONSIDERATIONS

Tuesday Afternoon, 3:15-5:00

Presiding: James G. Stager, Los Alamos National Laboratory, and Wayne A. Ross, Battelle Pacific Northwest Laboratory

E1 - A Study of Zirconolite from Sri Lanka and South Africa, R. F. Haaker, R. C. Ewing, University of New Mexico; T. J. Headley, Sandia National Laboratories

E3 - Experimental and Theoretical Analyses of Small-Scale Radionuclide Migration Field Experiments, K. L. Erickson and D. R. Fortney, Sandia National Laboratories

E4 - Reference Laboratory Testing for Backfill, R. M. Chung and F. Y. Yokel, National Bureau of Standards

E5 - Studies of Localized Corrosion at High Temperatures of Pit and Crevice Microenvironments, V. K. Hardman and J. Kruger, National Bureau of Standards

E6 - Strontium-Basalt Reactions Under Nuclear Waste Repository Conditions, S. Komarneni, Pennsylvania State University


E10 - Radiation Induced Sodium Metal Colloid Formation in Natural Rock Salt from Several Geological Localities, J. J. Loman, P. W. Levy and K. J. Swyler, Brookhaven National Laboratory

E11 - Study of Polyhalite from the WIPP Site, New Mexico, D. G. Brookins, University of New Mexico

E12 - Uranium-Lead Radiometric Age Determinations of Naturally Occurring U(VI) Minerals: Application to Radwaste Storage, D. G. Brookins, University of New Mexico
E13 — Diffusion of Neptunyl(VI)-and Per technate Ions in Marine Sediments, F. Schreiner, S. Fried and A. Friedman, Argonne National Laboratory

E14 — Radiogeological Assessment of Candidate Sites for Nuclear Waste Repositories, Exemplified by Studies of the Strapa Pluton, Sweden, H. A. Wollenberg, S. Flexer and L. Andersson, Lawrence Berkeley Laboratory


E16 — Identification of Possible High Integrity Containers for Nuclear Waste Disposal, J. Williams, Hittman Nuclear and Development Corporation

E17 — Predictions of Radionuclide Migration Rates for a Subseaed Repository, L. H. Brush, Sandia National Laboratories

SESSION F
NON HIGH-LEVEL WASTE ASSESSMENTS

Wednesday Morning, 8:15-11:35
Presiding: James G. Steger, Los Alamos National Laboratory, and Ron H. Flowers, AERE Harwell, UK

8:20-8:40 F1 — Stochastic Analysis of Groundwater Flow and Contaminant Transport in a Fractured Rock System, F. J. Schwartz, A. S. Crowe, University of Alberta; L. Smith, University of British Columbia, Canada

8:40-9:00 F2 — Solidification of Radioactive Wastes with Thermosetting Resin, M. Hayashi, Tokyo Electric; K. Kobayashi, Tohoku Electric; O. Okamoto, Chubu Electric; T. Kagawa, Chugoku Electric; K. Wakamatsu, Japan Atomic; H. Irie, Toshiba Corporation; H. Matsura and Y. Nakayama, NAIG Laboratory, Japan

9:00-9:20 F3 — Nuclear Waste Disposal: The Interface Between Performance Assessment and Research, R. B. Lyon, AECL, Whiteshell, Canada


9:40-10:00 F5 — Performance of Asphalt and Clay Liners as a Uranium Mill Tailings Leachate Barrier, J. L. Buelt, V. Q. Hale and S. M. Barnes, Battelle Pacific Northwest Laboratory

10:00-10:15 BREAK

10:15-10:35 F6 — Behavior of Radionuclides in Fused Waste Disposal-Site Soil Produced by In-Situ Vitrification, C. L. Timmerman and J. L. Buelt, Battelle Pacific Northwest Laboratory


SESSION G
PROCESSING COMPLEXITIES AT FULL SCALE

Wednesday Afternoon, 1:30-3:00

Presiding: Charles M. Brown, Rockwell-Rocky Flats, and Torbjorn Westermark, Royal Institute of Technology, Sweden

1:30-1:45  G1 – Processing Tailored Ceramic Nuclear Waste Forms, J. Flintoff, D. R. Clarke, A. B. Harker, P. E. D. Morgan and C. M. Jantzen, Rockwell Science Center

1:45-2:00  G2 – On-Line Measurements of the Volatilization of Ruthenium in a Vitrification Process, R. Odoi, Institute for Chemical Technology, Julich, FRG


2:45-3:00  G6 – Metastable Liquid Immiscibility in Nuclear-Waste Glasses, J. E. Engell and G. Roed, Technical Univ. of Denmark

SESSION H
POSTER SESSION

NON-HIGH-LEVEL, RADIATION EFFECTS, PROCESSING, AND CHEMICAL AND PHYSICAL PROPERTIES

Wednesday Afternoon, 3:00-5:00

Presiding: Charles M. Brown, Rockwell - Rocky Flats, and Kurt Wolfsberg, Los Alamos National Laboratory

H1 – Mercury Reduction and Removal During High-Level Radioactive Waste Processing and Vitrification, R. E. Eibling and J. R. Fowler, Du Pont - Savannah River Laboratory


H3 – Immersion and Leach Tests on Solidified Decontamination Wastes from Dresden Unit 1, R. E. Barletta, J. W. Adams and R. E. Davis, Brookhaven National Laboratory.

H5 — Biological Intrusion of Low Level Waste Trench Covers, T. E. Hakonson, Los Alamos National Laboratory


H7 — The System SrMoO₄-BaMoO₄-CaMoO₄: Compatibility Relations, The Implications for Superalumina Ceramics, B. E. Scheetz, W. P. Freeborn, J. Papin and W. B. White, Pennsylvania State University


H12 — Immobilization of ¹⁴C Formed During Reactor Operations, S. Fried, F. Schreiner, D. Cohen, J. Hines and A. M. Friedman, Argonne National Laboratory

H13 — Lanthanide Orthophosphates as a Matrix for Solidified Radioactive Defense and Reactor Wastes, M. Petek, M. M. Abraham and L. A. Boatner, Oak Ridge National Laboratory


H16 — The Influence of Gamma Irradiation on the Leaching Behavior of Modified SYNROC-B Ceramic Waste Form, A. G. Solomah, North Carolina State University

H17 — Migration of Radionuclide Chains in Sub-seabed Disposal, A. K. Ray, University of Kentucky; H. E. Nuttall, University of New Mexico


H19 — Radiation Effects in Radwaste Glasses: A Reappraisal of Alpha-Recoil Aging as Simulated by Ion Implantation, J. D. Dran, Y. Langevin, M. Maurette and J. C. Petit, Orsay, France

H20 — Rheological Characterization of Cementitious Grouts Used to Dispose of Intermediate-Level Radio-
active Waste by Hydrofracturing at Oak Ridge National Laboratory, E. W. McDaniel and J. G. Moore, Oak Ridge National Laboratory

SESSION I
RADIATION EFFECTS ON NUCLEAR WASTE FORMS
Thursday Morning, 8:15-12:00
Presiding: Clyde J. M. Northrup, Jr., Sandia National Laboratories and Lynn A. Boatner, Oak Ridge National Laboratory

8:20 - 8:40 11 Enhanced Dissolution of Glass in the Presence of Salts and Radiation Damage, C. Burman and W. A. Lanford, State University of New York at Albany

8:40 - 9:00 12 Influence of Glass Composition and Environmental Parameters on the Durability of Alpha-Recoil Aged Radwaste Glasses, J. C. Dran, M. Maurette, J. C. Petit and B. Vassent, Orsay, France


9:40 - 10:00 15 Effects of Alpha, Gamma, and Alpha-Recoil Radiation on Borosilicate Glass Containing Defense High-Level Nuclear Waste, N. E. Bibler, Du Pont - Savannah River Laboratory

10:00 - 10:15 BREAK

10:15 - 10:35 16 Properties of Alpha Doped Glasses Referring to the Long Term Disposal of Solidified High-Level Radioactive Wastes, N. Jacquet-Francillon and E. Vernaz, CEA, France

10:35 - 10:55 17 Study of the Metamict Transformation in Alpha-Quartz Using High Resolution Lattice Imaging and Convergent Beam Electron Diffraction, M. R. Pascucci, Case Western Reserve University; J. L. Hutchison, Oxford University, UK; S. McKernan, J. A. Eades, Bristol University, UK, and L. W. Hobbs, Massachusetts Institute of Technology


SESSION I
CHEMICAL AND PHYSICAL PROPERTIES OF WASTE FORMS – SESSION II
Thursday Afternoon, 1:30-3:50
Presiding: Wayne A. Ross, Battelle Pacific Northwest Laboratory, and Gerald H. Daly, U.S. Department of Energy


1:50- 2:10 J2 —Development of Sphene-Based Glass Ceramics Tailored for Canadian Waste Disposal Conditions, P. J. Hayward and E. V. Cecchetto, AECL, Whiteshell, Canada


3:30- 3:50 J7 —Alkoxide Derived Amorphous Solids as an Alternate Nuclear Waste Form, J. M. Pope and D. E. Harrison, Westinghouse Research and Development Center

SYMPOSIUM E
METASTABLE MATERIALS
FORMATION BY ION IMPLANTATION
Jointly Sponsored by
The American Physical Society
Chairmen:
S.T. Picraux, Sandia National Laboratories
W. J. Choyke, Westinghouse Electric Corporation Research and Development Center
November 16-18, 1981

Session E-1: Ion Beam Mixing
Session E-2: Metastable Materials
Session E-3: Amorphous Materials
Session E-4: Applications and Techniques
Session E-5: Implantation and Materials Properties*
Session E-6: Ion Implantation and Pulsed Beam Annealing†

*Joint Poster Session with Symposium F: Rapidly Solidified Metastable Materials
SESSION E-1
ION BEAM MIXING

Session Chairman: J. M. Poate, Bell Laboratories
Monday Morning, November 16 – Parlor A

E1.1 8:15—*Principles of Ion Mixing, M-A. Nicolet, California Institute of Technology, Pasadena, CA

1.2 8:45—*Ion-Beam Surface Modification and Radiation-Induced Segregation, L. E. Rehn, Argonne National Laboratory, Argonne, IL

1.3 9:15—Dynamical Behavior of the Subsurface Region in Alloys Under Ion Bombardment at High Temperatures, Nghü Q. Lam and H. Wiedersich, Argonne National Laboratory, Argonne, IL


1.5 9:55—Material Transport in the Formation of Metastable Materials by Ion Implantation, S. Matteson, Texas Instruments, Dallas, TX

10:15—BREAK

1.6 10:30—Ion-Beam Mixing of Cu-Au and Cu-W Systems, Zhong-He Wang, H. Westendorp and F. W. Saris, FOM Institute for Atomic and Molecular Physics, Amsterdam, The Netherlands

1.7 10:50—Ion Beam Mixing of Sb-Fe, Sb-AI, Sb-Si, Sb-GaAs and In-GaAs Systems, J. S. Williams, K. T. Short, F. M. Adams and D. K. Sood, Royal Melbourne Institute of Technology, Melbourne, Australia

1.8 11:10—Ion-Beam-Induced Mixing and Demixing in the Au-Si System, B. X. Liu, L. Wielunski and Marc-A. Nicolet, California Institute of Technology, Pasadena, CA; S. S. Lau, University of California, San Diego, La Jolla, CA

1.9 11:30—Temperature Dependence of Ion Beam Mixing in Al, S. T. Pieraux, D. M. Follstaedt and J. Delafond, Sandia National Laboratories, Albuquerque, NM

1.10 11:50—Ion Beam Mixing of Sb Layers in Al, B. M. Paine and Marc-A. Nicolet, California Institute of Technology, Pasadena, CA

1.11 12:10—Depth Profiling of Xe Ion-Mixed Films of Al on Si, F. Namavar, F. A. Otter++, and J. I. Budnick++, University of Connecticut, Storrs, CT; ++United Technologies Research Center, East Hartford, CT

12:30—LUNCH

*Invited Paper
SESSION E-2
METASTABLE MATERIALS
Session Chairman: S. S. Lau, University of California, San Diego
Monday Afternoon, November 16 — Parlor A

E2.1 1:30—*Thermodynamics of Metastable Structure Synthesis, David Turnbull, Harvard University, Cambridge, MA

2.2 2:00—Metastable Solid Solutions of Impurities in Silicon, J. S. Williams and K. T. Short, Royal Melbourne Institute of Technology, Melbourne, Australia


2.5 3:00—Precipitation Phenomena in Implanted Ionic Oxide MgO, A. Perez, M. Treilleux, L. Frisch and G. Marest, Universite Claude Bernard Lyon I, 69622 Villeurbanne, France


3:40— BREAK

2.7 4:00—*Comparison of Metastable Phase Formation by Ion, Electron or Laser Beams, J. W. Mayer, Cornell University, Ithaca, NY

2.8 4:30—X-Ray Structural Studies of Ion Beam Mixed Films of Niobium and Gold on Silicon (111) Substrates, F. Namavar, D. Pease, J. I. Budnick, University of Connecticut, Storrs, CT; F. A. Otter, United Technologies Research Center, East Hartford, CT

2.9 4:50—Effect of Ion Irradiation on the Silicide Formation of Ni and Pt, L. S. Wielunski, C-D. Lien, B. X. Liu and Marc-A. Nicolet, California Institute of Technology, Pasadena, CA

2.10 5:10—Reaction of N2+ Beams with Aluminum Surfaces, J. Ashley Taylor, Perkin-Elmer Corp., Eden Prairie, MN; J. Wayne Rabalais, University of Houston, Houston, TX

*Invited Paper

SESSION E-3
AMORPHOUS MATERIALS
Session Chairman: G. Dresselhaus, Massachusetts Institute of Technology
Tuesday Morning, November 17 — Parlor A

E3.1 8:30—*Atomic and Electronic Structure of Amorphous Alloys, W. L. Johnson, California Institute of Technology, Pasadena, CA


10:00—BREAK

3.5 10:20—Transmission Electron Microscopy and Resistivity Measurements on Pd<sub>1-x</sub>Si<sub>x</sub> Alloys Prepared by Ion Implantation, A. Traverse, M. O. Rault, L. Mendoza-Zelis, M. Schack, H. Bernas, J. Chaumont, C.S.N.S.M., BP 1, 91406 Orsay, France; L. Dumoulin, Université Paris XI, 91405 Orsay, France

3.6 10:40—Electrical Properties of the Ion Implanted Pd<sub>1-x</sub>Si<sub>x</sub> System, L. Mendoza-Zelis, A. Traverse, J. Chaumont, H. Bernas, C.S.N.S.M., BP 1, 91406 Orsay, France; L. Dumoulin, Université Paris XI, 91405 Orsay, France

3.7 11:00—Study of Metastable Fe-W Films, G. Goltz, R. Fernandez and M-A. Nicolet, California Institute of Technology, Pasadena, CA


3.9 11:40—Non Equilibrium Structures in Ion-Implanted B<sub>2</sub> Type Ordered Alloys Fe-Al and Ni-Ti, P. Moine, J. P. Riviere, N. Junqua and J. Delafond, Université de Poitiers, 86000 Poitiers, France

12:00—LUNCH

*Invited Paper

SESSION E-4
APPLICATIONS AND TECHNIQUES

Session Chairman: J. K. Hirvonen, Naval Research Laboratory
Tuesday Afternoon, November 17 – Parlor A

E4.1 1:00—*DOD Applications of Implantation-Modified Materials, G. K. Hubler, Naval Research Laboratory, Washington, DC

4.2 2:30—*Implantation and Industrial Metal Processing, R. E. Fromson and R. Kosowsky, Westinghouse Electric Corp. Research and Development Center, Pittsburgh, PA
4.3  1:55—Mechanical Properties of Ion-Implanted Thin Films and Interfaces, G. L. Miller, M. Soni, M. McDonald, E. N. Kaufmann, Bell Laboratories, Murray Hill, NJ; R. L. Fenstermacher, Drew University, Madison, NJ

4.4  2:15—Ultra-Microhardness Tests on Ion Implanted Surfaces, John B. Pethica, BBC Brown Boveri Research Center, CH-5406 Baden, Switzerland

4.5  2:35—Trapping and Surface Permeation of Deuterium in He-Implanted Fe, S. M. Myers and D. M. Follstaedt, Sandia National Laboratories, Albuquerque, NM; F. Beutnerbacher and J. Bottiger, Institute of Physics, University of Aarhus, Aarhus, Denmark

2:55—BREAK

4.6  3:15—Optical Imaging and Information Storage in Ion Implanted Ferroelectric Ceramics, P. S. Peercy and C. E. Land, Sandia National Laboratories, Albuquerque, NM

4.7  3:45—Ion Beam Deposition of Amorphous Carbon Films with Diamondlike Properties, John C. Angus, Case Western Reserve University, Cleveland, OH; Michael J. Mirtich and Edwin G. Wintucky, NASA Lewis Research Center, Cleveland, OH

4.8  4:05—Raman Spectra of Ion Implanted Graphite, B. S. Elman, H. Mazurek, M. S. Dresselhaus and G. Dresselhaus, Massachusetts Institute of Technology, Cambridge, MA

4.9  4:25—The Microstructure of Silicon-On-Insulator Structures Formed by High Dose Oxygen Ion Implantation, R. F. Pinizzotto, B. L. Vaandrager and H. W. Lam, Texas Instruments, Inc., Dallas, TX

4.10  4:45—The Search for a Nitrogen Lattice Site in Implanted Stainless Steel, I. V. Mitchell and H. H. Plattner, Chalk River Nuclear Laboratories, Chalk River, Canada; G. T. Ewan and M. M. Ferguson, Queen's University, Kingston, Canada; J. L. Whitton, H. C. Oersted Institute, Copenhagen, Denmark

*Invited Paper

SESSION E-5
IMPLANTATION AND MATERIALS PROPERTIES
(Joint Session with Symposium F: Rapidly Solidified Metastable Materials)
Tuesday Evening Poster Session
7:00-10:00 PM — Bay State Room

E5.1  High Fluence Boron Implantation in Beryllium, R. A. Kant, J. S. Wollam† and A. R. Knudson**: †Naval Research Laboratory, Washington, DC; ‡C. S. Draper Laboratory, Cambridge, MA

5.2  Fatigue Improvement of Ti Alloys by Ion Implantation and Transmission Electron Microscopic Studies, Shiro Fujishiro, Wright-Patterson AFB, OH; G. K. Hubler and K. S. Grabowski, Naval Research Laboratory, Washington, DC

5.4 The Effect of Nitrogen Implantation of Martensite in 304 Stainless Steel, R. G. Vardiman and I. L. Singer, Naval Research Laboratory, Washington, DC

5.5 Structural and Mechanical Properties of Ion Implanted Al and Cu, P. Moine and J. Delafond, Universite de Poitiers, 86000 Poitiers, France

5.6 Effects of Heavy Dose Implantations of C⁺ and B⁺ into A-15 Nb₃Al Superconductors, Mireille Treuille Clapp, University of Massachusetts, Amherst, MA

5.7 Superconducting Transition Temperatures of C-Implanted A15 Structure V-Si, J. R. Gavaler and A. I. Braginski, Westinghouse Research and Development Center, Pittsburgh, PA; B. R. Appleton, C. W. White and J. M. Williams, Oak Ridge National Laboratory, Oak Ridge, TN

5.8 Ion Beam Mixing of Ceramic Alloys—Preparation and Mechanical Properties, M. B. Lewis and C. J. McHargue, Oak Ridge National Laboratory, Oak Ridge, TN

5.9 Surface Mechanical Properties of Ceramics Modified by Implantation, P. F. Page, University of Cambridge, Cambridge, UK

5.10 Mechanical Property Improvements on Ion Implanted Diamond, N. E. W. Hartley, AERE Harwell, Didcot, UK

5.11 Structure and Properties of Silicon Carbide Implanted with Chromium, C. J. McHargue, M. B. Lewis, J. M. Williams, Oak Ridge National Laboratory, Oak Ridge, TN


5.13 Experiments in Recoil Implantation, M. Baron and R. Kossowsky, Westinghouse Research and Development Center, Pittsburgh, PA

5.14 The Effects of Ion-Implantation Damage on the Mossbauer Spectrum of Iron, F. L. Milder and C. Bajgar, Spire Corporation, Bedford, MA

5.15 Saturation, Exchange and Retention of Implanted H/D Ions in Fused Silica, B. L. Doyle and G. W. Arnold, Sandia National Laboratories, Albuquerque, NM

5.16 Metastable Percolation Phase Formation in LiF Implanted with Alkali Ions, J. Davenas and C. Dupuy, Dept. de Physique des Materiaux, Villeurbanne, France


5.18 SEM and AES Analysis of Ion Implanted Graphite, M. Shayegan, B. S. Elman, H. Mazurk, M. S. Dresselhaus and G. Dresselhaus, Massachusetts Institute of Technology, Cambridge, MA
5.19 Rapid Annealing of Implant Damage Using Thermal Radiation, Ronald T. Fulks, Varian Central Research, Palo Alto, CA; Carl J. Russo, Daniel F. Downey and Peter R. Hanley, Varian/Extrion, Gloucester, MA

5.20 Observations of Structural Modifications in Si and P Implanted GaAs, B. J. Isherwood and D. K. Wickenden, General Electric Co. Ltd., Hirst Research Center, Wembley, UK


5.22 Ion Beam Mixing of Ni Film with Si Substrate by Xe+ Irradiation, L. S. Wielunski, B. M. Paine, B. X. Kuo, C-D Lien and M-A. Nicolet, California Institute of Technology, Pasadena, CA

5.23 Formation of Au-Si Metastable Phases by Ion-Beam-Induced Mixing, B. X. Liu, L. Wielunski, M. Maenpaa and Marc-A. Nicolet, California Institute of Technology, Pasadena, CA; S. S. Lau, University of California, San Diego, La Jolla, CA

5.24 Implantation into Covalent Polymeric Materials, David C. Weber, Patrick Brant and Carmine A. Carosella, Naval Research Laboratory, Washington, DC

SESSION E-6
ION IMPLANTATION AND PULSED BEAM ANNEALING
(Joint Session with Laser and Electron Beam Interactions with Solids Symposium)
Session Chairman: F. W. Saris, FOM, Amsterdam
Coordinator: W. K. Chu, IBM, Hopewell Junction

Wednesday Morning, November 18 — Georgian Room

E6.1 8:30—*Pulsed Ion Beam Annealing, John E. E. Baglin, IBM Thomas J. Watson Research Center, Yorktown Heights, NY

6.2 9:00—Defect Analysis on Si by Pulsed Ion Beam, S. R. Mader and W. K. Chu, IBM General Technology Division, Hopewell Junction, NY

6.3 9:15—Microstructures Induced in Metal Thin Films on Silicon by Pulsed Ion Beam Annealing, J. J. Chen, L. S. Hung, J. W. Mayer, Cornell University, Ithaca, NY; J. E. Baglin, IBM Thomas J. Watson Research Center, Yorktown Heights, NY

6.4 9:30—*Metallurgy and Microstructures of Pulse-Melted Alloys, David M. Follstaedt, Sandia National Laboratories, Albuquerque, NM

10:00—BREAK


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6.7 11:00—Thermal Stability of Metastable Phases Produced by Laser Treatment of Aluminum Implanted with Cr and Mo, G. Battaglin, A. Carnera, G. Della Mea, P. Mazzoldi, Padova University, Padova, Italy; Animesh K. Jain, V. N. Kulkarni and D. K. Sood, Bhabha Atomic Research Center, Bombay, India


6.9 11:30—Pulsed Laser Annealing of Ni, and MgO Containing Ni Precipitates, J. Narayan, Oak Ridge National Laboratory, Oak Ridge, TN


6.11 12:00—Pulsed Electron Beam Melting of Fe, J. A. Knapp and D. M. Follistaedt, Sandia National Laboratories, Albuquerque, NM

12:15—LUNCH

*Invited Paper

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**SYMPOSIUM F**

**RAPIDLY SOLIDIFIED AMORPHOUS AND CRYSTALLINE ALLOYS**

Chairmen: B. H. Kear, Exxon Research & Engineering Company B. C. Giessen, Northeastern University

November 17-19, 1981

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**SESSION I**

**FUNDAMENTALS**


Tuesday Afternoon, November 17 — Ballroom West

1:30—*Non-Equilibrium Thermodynamics, M. H. Hillert, Royal Institute of Technology, Stockholm, Sweden

2:00—*Theory of Melt Undercooling, D. Turnbull, Harvard University, Cambridge, MA

2:30—*Growth Kinetic Limitations During Rapid Solidification, W. J. Boettinger, National Bureau of Standards, Washington, DC
3:00— BREAK

3:15— "Coarsening of Rapidly Solidified Structures, M. E. Glicksman and P. W. Voorhees, Rensselaer Polytechnic Institute, Troy, NY


4:15— "Formation and Stability of Extended Solid Solutions Made by Rapid Quenching From the Melt, H. Jones, University of Sheffield, England

4:30— "Development of Morphological Instability and Cells During Rapid Solidification of Laser-Annealed Silicon Alloys, J. Narayan and J. Fletcher, Oak Ridge National Laboratory, Oak Ridge, TN

4:45— "Deformation Induced Dilatations in Metallic Glasses at Low Temperatures, J. Megusar, A. S. Argon and N. J. Grant, MIT, Cambridge, MA

*Invited Talk

SESSION II

POSTER SESSION

Chairmen: J. B. VanderSande, MIT, Cambridge, MA
C. M. Adam, P&WA, West Palm Beach, FL

Tuesday Evening, November 17 - Bay State Room
7:30 PM - 10:00 PM

F.II.1 Sorption of Hydrogen and Deuterium in Glassy Pd$_{90}$Si$_{10}$ By a Bending-Cantilever Technique, B. S. Barry and W. C. Pritchett, IBM Thomas J. Watson Research Center, Yorktown Heights, NY

F.II.2 Critical Properties and Flux Pinning in Liquid Quenched Nb-Ga Superconducting Alloys, G. Clements, Gordon McKay Laboratory, Harvard University, Cambridge, MA; J. Bevk, Bell Laboratories, Murray Hill, NJ

F.II.3 Analysis of a Rapidly Solidified High-Phosphorus Austenitic Steel Containing an Amorphous Interendritic Phase, T. F. Kelly, G. B. Olson and J. B. VanderSande, MIT, Cambridge, MA

F.II.4 FCC and BCC Solidification Products in a Rapidly Solidified Austenitic Steel, T. F. Kelly, J. B. VanderSande and M. Cohen, MIT, Cambridge, MA

F.II.5 Consolidation Studies of Ni60 Nb40 Metallic Glass Strips Into Metal Matrix Composites, S. J. Cytron, AARDC, Dover, NJ

F.II.6 Friction and Sliding Wear Behavior of Nickel Base Amorphous Alloys, N. Saka, MIT, Cambridge, MA; Y. V. Murty, AVCO, Lowell, MA

F.II.7 An Automated Laboratory Apparatus for the Production of Rapidly Solidified Submicron Powders, Z. Shanfield, J. Perel and J. F. Mahoney, Phrasor Scientific, Inc., Duarte, CA; C. Levi, University of Illinois, Urbana, IL
F.II.8  Rapidly Solidified Long Range Ordered Alloys,  
E. H. Lee, C. C. Koch and C. T. Liu, Oak Ridge  
National Laboratory, Oak Ridge, TN

F.II.9  Solidification Mechanism of Highly Undercooled  
Metal Alloys, Y. Shiohara, M. G. Chu, D. Mac-  
Isaac and M. C. Flemings, MIT, Cambridge, MA

F.II.10  The Effect of Fretting Corrosion on Amorphous  
Alloys, R. Becker and G. Sepold, Bremer In-  
titut fur angewandte Strahltechnik, West Ger-  
manny

F.II.11  'Electronic Structure of CuZr and PdSi Metallic  
Glasses, F. A. Leon and K. H. Johnson, MIT,  
Cambridge, MA

F.II.12  Microstructures of Rapidly Solidified Fe- Al-Zr  
Alloys, A. N. Patel, L. F. Vassamillet and A. H.  
Clauer, Battelle Columbus Laboratories, Colum-  
bus, OH

F.II.13  Microstructural Study of Devitrified Amorphous  
Alloys, L. F. Vassamillet, R. E. Maringer, R. S.  
Carbonara and J. L. McCall, Battelle Columbus  
Laboratory, Columbus, OH

F.II.14  Pseudo-Elastic Behaviour in Rapidly Quenched  
Dilute Tin Alloys, M. Gallerneault and R. W.  
Smith, Queen's University, Kingston, Canada

F.II.15  Characteristics of the α→β Transformation in  
Rapidly-Quenched Tin-Germanium Alloys, M.  
Gallerneault and R. W. Smith, Queen's Uni-  
versity, Kingston, Canada

F.II.16  Influence of Solidification Parameters on the Micro-  
structure of Rapidly Quenched (Fe,Co, Ni)-B  
Alloys, U. Koster, University Dortmund, Dort-  
mund, F.R. Germany; U. Herold, D. Krause and  
G. Tersteegen, Institut fur Werkstoffe, Ruhr-  
Universitat, Bochum, F.R. Germany

F.II.17  Influence of Solidification Parameters on Thermal  
Stability and Mechanical Properties of Fe-Ni-β  
Metallic Glasses, U. Herold and H.-G. Hillen-  
brand, Institut fur Werkstoffe, Ruhr-Universitat,  
Bochum, F.R. Germany and U. Koster, University  
Dortmund, Dortmund, F. R. Germany

F.II.18  Mechanical Properties of (Fe100-3Mx183B17  
Metallic Glasses, G. Hunger and B. L. Mordike,  
Institut fur Werkstoffkunde und Werkstofftechnik  
der Technischen Universität Clausthal, West  
Germany

F.II.19  Influence of Cr, Co and Ni on the Crystallization  
Behaviour of (Fe1-xM)y Metallic Glasses, H. W.  
Bergmann and U. Brokmeier, Institut fur Werkstoffkunde und Werk-  
stofftechnik der Technischen Universität Clausthal, West Germany

F.II.20  Calculation of the Crystallization Behaviour of Me-  
tallic Glasses, H. W. Bergmann and H. U.  
Fritsch, Institut fur Werkstoffkunde und Werk-  
stofftechnik der Technischen Universität Clausthal, West Germany

F.II.21  Diffusion Rates of Metals in NiZr2 Metallic Glass,  
D. Akhtar, B. Cantor and R. W. Cahn, Univer-  
sity of Sussex, Brighton, Sussex, England

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F.II.23 Microstructure and Mechanical Properties of Laser-Processed Ni-Al-Mo-Ta Alloys, D. B. Snow, United Technologies Research Center, East Hartford, CT

F.II.24 Diffusivity of Different Sized Atoms in Metal-Metal and Metal-Metalloid Glasses, M. Kijek and B. Cantor, University of Sussex, Falmer, Sussex, England

F.II.25 The Metallography and Mechanical Properties of IM and PM Fe-Si-Al Alloys, E. S. Powell and G. W. Powell, The Ohio State University, Columbus, OH


F.II.27 Surface Alloying of Tool Steels With Carbides By Laser or Electron Beam Melting, B. L. Mordike and H. W. Bergmann, Institut fur Werkstoffkunde und Werkstofftechnik der Technischen Universitat Clausthal, West Germany

F.II.28 New High Strength Copper Base Alloys Made Using Rapid Solidification Process, V. Panchanathan and R. Ray, Marko Materials, Inc., N. Billirica, MA; B. C. Giessen, Institute of Chemical Analysis, Northeastern University, Boston, MA

F.II.29 Effect of Alloying Additions on the Hydrogen Absorption Isotherms of Pd-Si, R. Finocchiaro, C. L. Tsai and B. C. Giessen, Department of Chemistry, Northeastern University, Boston, MA


F.II.31 Property Enhancement in Rapidly Quenched Alloy Surfaces, M. Tuli, Pilgrim Materials Corp., East Granby, CT; P. R. Strutt, University of Connecticut

F.II.32 Catalytic Properties of Amorphous and Crystalline Pd-Si Alloys, S. Mahmoud, D. Forsythe and B. C. Giessen, Department of Chemistry, Northeastern University, Boston, MA

F.II.33 Elastic Modulus, Dilatometric and Calorimetric Measurements of the Structural Relaxation of Metallic Glasses, M. G. Scott, University of Sussex, Brighton, England

F.II.34 Effect of Fast Neutron Irradiation on Mechanical Properties of Amorphous Ni$_{40}$Fe$_{6}$Co$_{29}$Cr$_{12}$Mo$_{6}$B$_{16}$, R. Mishra and Vikil Singh, Banaras Hindu University, Varanasi, India

F.II.35 Preparation of Amorphous Fe-B-Si Powder, R. Murphy, Department of Mechanical Engineering, Northeastern University, Boston, MA
SESSION III
PROCESSING
Chairmen: A. M. Adair, AFML, Dayton, OH
J. B. Moore, P&W, West Palm Beach, FL
Wednesday Morning, November 18 – Ballroom West
8:30—*Rapid Solidification of Metastable Materials, H. H. Liebmann and J. L. Walter, General Electric, Schenectady, NY
9:00—*The Modeling of Rapidly Solidified Powders, R. J. Patterson, Pratt and Whitney Aircraft, West Palm Beach, FL
9:30—*Critical Factors in Laser and e.b.-Glazing of Materials, P. R. Strutt, University of Connecticut, Storrs, CT; B. H. Kear, Exxon Research and Engineering Company, Linden, N.J.; M. Tull, Pilgrim Materials Corp., East Granby, CT
10:00—*Undercooling Behavior of Liquid Metals, J. H. Perpezecko and J. S. Paik, University of Wisconsin, Madison, WI
10:30—COFFEE BREAK
10:45—Casting of Laminated Ribbon Using a Modified Melt Spinning Technique, R. V. Raman, Battelle Columbus Labs., Columbus, OH; A. F. Witt, MIT, Cambridge, MA
11:00—Comparison of the Quench Rates Attained in Gas Atomized Powders and Melt-Spun Ribbons of Co and Ni Base Superalloys, F. Duflos and J. F. Stohr, ONERA, Chatillon, France
11:15—New Nickel Base Amorphous Spray Powders, V. Panchanathan and R. Ray, Marko Materials, Billerica, MA; C. L. Tsai and S. Whang, Northeastern University, Boston, MA
11:30—The Laser Surface Treatment of Aerospace Steels, G. Christodoulou and W. M. Steen, Imperial College, London, UK

*Invited Talk

SESSION IV
STRUCTURE/PROPERTY RELATIONSHIPS IN METALLIC GLASSES
Chairmen: G. Mayer, ARO, Durham, NC
B. C. Giesen, Northeastern University, Boston, MA
Wednesday Afternoon, November 18 – Ballroom West
1:30—*Localized Shear Deformation of Amorphous Metals, J. C. M. Li, University of Rochester, Rochester, NY
2:00—*Relation Between Chemical Short-Range Order in Liquid and Amorphous Alloys, C. N. J. Wagner, University of California, Los Angeles, CA; H. Ruppersberg, Universitat des Saarlandes, Saarbrucken, West Germany
SESSION V
STRUCTURE/PROPERTY RELATIONSHIPS IN AMORPHOUS AND CRYSTALLINE ALLOYS

Chairmen: B. A. MacDonald, ONR, Arlington, VA
J. R. Manning, NBS, Washington, DC

Thursday Morning, November 19 — Ballroom West

8:30—Wear of Transition Metal Rich Glassy Alloys, S. Whang and B. C. Giessen, Northeastern University, Boston, MA

8:45—The Influence of Hydrogen on An Iron-Based Amorphous Alloy, H. Shahani and H. Soderhjelm, Royal Institute of Technology, Stockholm, Sweden

9:00—*Techniques for Investigating Structure and Composition With High Spatial Resolution, J. B. Vander Sande, MIT, Cambridge, MA

9:30—*Rapidly Solidified Steels, B. Cantor, University of Oxford, Oxford, UK

10:00—*Perpendicularly Crystallized Ribbons by Means of Rapid Solidifications from Melts, N. Tsuya, Tohoku University, Sendai, Japan

10:30—COFFEE BREAK
10:45—*Dehydration/Hot Consolidation of Metallic Glasses: Novel Multiphase Crystalline Materials in Bulk Shapes With Technological Potentials, R. Ray, Marko Materials, Billerica, MA

11:15—Crystallization Behavior and Properties of Rapidly Solidified Ni-Mo-B Alloys, C. C. Wan, Allied Corporation, Morristown, NJ

11:30—Requirements for the Formation of Metastable Crystalline Phases and Glasses in Ternary Fe-C-Base Alloys, E. Hornbogen and I. Schmidt, Ruhr-Universitat Bochum, Bochum, West Germany

11:45—Micromechanisms of Crystallization in (Fe, Co, Ni)-Zr Metallic Glasses, H. G. Franke, U. Koster and H. W. Schroeder, University Dortmund, Dortmund, F. R. Germany and J. Muller, Ruhr-Universitat, Bochum, F. D. Germany

*Invited Talk

SESSION VI
STRUCTURE/PROPERTY RELATIONSHIPS IN CRYSTALLINE ALLOYS

Chairmen: N. J. Grant, MIT, Cambridge, MA
S. M. Wolf, DOE, Washington, DC

Thursday Afternoon, November 19 — Ballroom West

1:30—Structure/Property Relationships and Applications of Rapidly Solidified Aluminum Alloys, C. M. Adam, Pratt and Whitney Aircraft, West Palm Beach, FL

2:00—Raney-Type Nickel Catalysts From RSR Atomization of Al-Ni Powder, F. D. Lemkey, United Technologies, East Hartford, CT


2:45—Microstructure and Properties of Fine Grained Supersaturated Fe-C Alloys, B. L. Mordike and H. W. Bergmann, Universitat Clausthal, West Germany

3:00—BREAK


3:30—Preferred Orientation in Splat-Quenched Materials, N. W. Blake, F. A. Hames and R. W. Smith, Queen's University, Kingston, Canada


4:00—Quantitative Treatment of the Microstructure of Rapidly Solidified Al-Fe-Co-Ni Alloys, T. H. Sanders, Jr., Georgia Institute of Technology, Atlanta, GA; J. W. Mullins and H. G. Paris, Alcoa Technical Center, Alcoa Center, PA

4:15—Characterization and Properties of Laser Quenched Aluminum Bronzes, C. W. Draper, Western Electric, J. M. Vandenberg, Bell Telephone Laboratories; C. M. Preeca, Korrosionscentralen ATV; C. R. Clayton, State University of New York at Stony Brook
SYMPOSIUM G
MATERIALS PROCESSING RESEARCH IN THE REDUCED GRAVITY ENVIRONMENT OF SPACE

Jointly Sponsored by the Universities Space Research Association (USRA)

Chairman: Guy E. Rindone, The Pennsylvania State University and USRA

November 16-19, 1981

SESSION I
OVERVIEW OF MPS RESEARCH BY NASA AND ESA (EUROPEAN SPACE AGENCY)

Chairman: Guy E. Rindone
Monday, November 16 — Stanbro Hall

8:30 AM Opening Remarks

8:40 Keynote Address: Materials Science in Space,
#IA.1 John R. Carruthers, Hewlett Packard Laboratories, Palo Alto, CA

9:20 Invited Address: Review of the European Microgravity Activities, Yves Malmejac and Ulrich Huth, Agence Spatiale Européenne, France

9:55 COFFEE BREAK

SESSION II
CONTAINERLESS MEASUREMENT AND PROCESSING TECHNOLOGIES

Chairman: William Oran, NASA Headquarters, Washington, DC
Monday, November 16 — Stanbro Hall

10:15 AM Invited Paper—Overview of Containerless Processing Technologies, M. Barmatz, Jet Propulsion Laboratory
10:45 Levitation Studies of Liquid Metals at High Temperatures, John L. Margrave, Rice University

11:05 High Temperature Property Measurements on Levitated Spheres, Paul C. Nordine, Yale University

11:25 A Dynamic Technique for Measurements of Thermophysical Properties at High Temperatures, Ared Cezairiyan, National Bureau of Standards

11:45 Levitation, Coating and Transport of Particulate Materials, C. D. Hendricks, Lawrence Livermore National Laboratory

12:05 LUNCH

1:30 Polymer Coating of Glass Microballoons Levitated in a Focused Acoustic Field, Ainslie T. Young, Los Alamos National Lab and Mark C. Lee, I-an Feng, Daniel D. Elleman and Taylor G. Wang, Jet Propulsion Laboratory

1:50 Controlled Action on Suspended Particles by Crossed Electric and Magnetic Fields, A. Bewersdorff, G. P. Gorler, DFVLR, Inst. fur Raumsimulation, Germany

2:10 Theory and Applications of Electromagnetic Levitation, R. T. Frost and Chien Wu Chang, General Electric Company

2:30 Crystal Nucleation in Pd-Si Alloys, A. J. Driman and D. Turnbull, Harvard University


3:10 BREAK

3:30 Application of Microgravity and Containerless Environments to the Investigation of Fusion Target Fabrication Technology, Mark C. Lee, J. Kendall, D. Elleman, Won-Kyu Rhim, R. Helz, C. Youngberg, I-an Feng and Taylor Wang, Jet Propulsion Laboratory

3:50 Investigation of Metallic and Metallic Glass Hollow Spheres for Fusion Target Application, Mark C. Lee, J. Kendall, T. Wang, Jet Propulsion Lab.; W. Johnson, California Institute of Technology

4:10 Convection and Impurity Macrosegregation in Directional Solidification in Space Processing Experiments, S. A. Nikitin, V. I. Polezhayev and A. I. Fedyushkin, Institute for Problems in Mechanics, USSR Academy of Sciences, Vernadskogo 101, 117526 Moscow, USSR
SESSION III
FLUIDS, TRANSPORT AND CHEMICAL PROCESSES
Chairman: Dudley A. Saville, Princeton University, Princeton, NJ
Tuesday, November 17 – Stanbro Hall

8:30 AM  Invited Paper, Title to be Announced, L. E. Scriven, University of Minnesota, Minneapolis, MN

9:00  An Experimental Study of Heat Induced Surface Tension Driven Flow, Y. Kamotani, S. Lowry and S. Ostrach, Case Western Reserve University


9:40  Benard-Marangoni Instability in a Rotating Liquid Layer Subjected to a Transverse Magnetic Field, G. S. R. Sarma, DFVLR, Institut fur Theoretische Stromungsmechanik, Germany

10:00  COFFEE BREAK

10:20  Measurement of Surface Rheological Effects on a Rotating Flow, Roger F. Gans and Timothy J. Singler, University of Rochester

10:40  Bubble Motion in a Rotating Liquid Body, P. Annamalai, R. Subramanian and R. Cole, Clarkson College of Technology


11:20  Expansive Convection in Vapor Transport Across Horizontal Rectangular Enclosures, B. S. Jhaveri and F. Rosenberger, University of Utah


12:00  LUNCH

1:30  Structure of Temperature and Velocity Fields in an Electro-Osmotically Driven Flow, D. A. Saville, Princeton University


2:10  Studies on Aqueous Two Phase Polymer Systems Useful for Partitioning of Biological Materials, D. E. Brooks, University of British Columbia
2:30  A Theory of Electrophoresis of Emulsion Drops in Aqueous Two-Phase Polymer Systems, S. Levine, University of British Columbia

2:50  Thermocapillary Motion of Bubbles Inside Drops, N. Shankar, R. Cole and R. S. Subramanian, Clarkson College of Technology

3:10  BREAK

SESSION IV
GLASS, CERAMICS AND REFRACTORIES

Chairman: Elias Snitzer, United Technologies, Hartford, CT

Tuesday, November 17 — Stanbro Hall

3:30 PM  Invited Paper: Glass Processing in a Microgravity Environment, D. R. Uhlmann, MIT, Cambridge, MA

4:00  Experimental Observation of the Thermocapillary Driven Motion of Bubbles in a Molten Glass under Zero Gravity Conditions, H. D. Smith, D. M. Mattox, Westinghouse R&D Center; W. R. Wilcox, R. S. Subramanian and M. Meyyappan, Clarkson College of Technology


4:40  The Effect of Chemical Reactions on Gas Bubble Behavior in Glassmelts, Michael C. Weinberg, GTE Laboratories

Wednesday, November 18 — Stanbro Hall

8:30 AM  Bubble Behavior in Molten Glass in a Temperature Gradient, M. Meyyappan, R. S. Subramanian and W. R. Wilcox, Clarkson College of Technology; H. Smith, Westinghouse R&D Center


9:10  Gels and Gel Derived Glasses in the Na2O-B2O3-SiO2 System, Shyama P. Mukherjee, Battelle

9:30  Microstructure and Immiscibility Behavior of Gel-Derived Soda-Silica Glasses, G. F. Neilson, Jet Propulsion Laboratory


10:10  COFFEE BREAK
SESSION V
ELECTRONIC MATERIALS
Chairman: Robert A. Laudise, Bell Laboratories,
Murray Hill, NJ
Wednesday, November 18 — Stanbro Hall

10:30 AM Invited Paper: Growth and Segregation Problems on Earth and in Space, Harry Gatos, MIT

11:00 Invited Paper: The Role of Fluid Flow Phenomena in the Czochralski Growth of Oxides, D. C. Miller, Airtron Division Litton Systems


11:50 Growth of Triglycine Sulfate (TGS) Crystals by Solution Technique, R. B. Lal, Alabama A&M University; R. L. Kroes, NASA/MSFC; W. R. Wilcox, Clarkson College of Technology

12:10 LUNCH

1:30—4:00 See Poster Session

7:00 PM Directional Solidification and Characterization of Hg$_1$$_x$Cd$_x$Te Alloys, S. L. Lehoczky and F. R. Szofran, McDonnell Douglas Research Laboratories

7:20 Electrical Characterization of Hg$_1$$_x$Cd$_x$Te Alloys, S. L. Lehoczky, F. R. Szofran, C. J. Summers and B. G. Martin, McDonnell Douglas Research Laboratories

7:40 Chemical Vapor Transport, Crystal Growth, Thermodynamic and Fluid Dynamic Analysis of the Hg$_1$$_x$Cd$_x$Te System, Heribert Wiedemer and D. Chandra, Rensselaer Polytechnic Institute

8:00 Point Defects in Doped and Undoped Hg$_1$$_x$Cd$_x$Te Alloys, H. R. Vydyvanath, Honeywell Inc., Lexington, MA

8:20 Growth of Single Crystals of Mercuric Iodide (Hgl$_2$) in Spacelab III, L. van den Berg and W. F. Schnappel, EG&G Energy Measurements Group

8:40 Increased Uniformity of Silicon Needed for Critical Devices - How can we Improve the Float-zone Process? Edward L. Kern, Consultant, Del Mar, CA

SESSION VI
METALS, ALLOYS, AND COMPOSITES
Chairmen: Robert Mehrabian and John R. Manning National Bureau of Standards, Washington, DC
Thursday, November 19 — Stanbro Hall

8:30 AM Influence of Diffusion and Convective Transport on Dendritic Growth in Dilute Alloys,
9:00 Convective and Interfacial Instabilities During Solidification of Succinonitrile Containing Ethanol, R. J. Schafer and S. R. Coriell, National Bureau of Standards, Washington, DC

9:30 Solidification of Undercooled Monotectic Alloys, J. H. Perepezko, C. Galaup and K. Cooper, University of Wisconsin-Madison

10:00 COFFEE BREAK

10:20 Studies of Liquid Metal Surfaces Using Auger Spectroscopy, Stephen C. Hardy and Joseph Fine, National Bureau of Standards

10:50 Suppression of Marangoni Convection with Oxide Films, J. D. Verhoeven, M. A. Nosack and A. J. Bevolo, Iowa State University

11:20 Influence of Gravity Driven Convection on the Directional Solidification of Bi/MnBi Eutectic Composites, David J. Larson and Ron G. Pirch, Grumman Aerospace Corporation, Bethpage, NY

11:45 Response of MnBi-Bi Eutectic to Freezing Rate Changes, M. Nair, K. Doddi, T-W. Fu, W. R. Wilcox and P. S. Ravishankar, Clarkson College of Technology; D. Larson, Grumman Aerospace Corporation

12:10 LUNCH

1:30 Solidification of Hypermonotectic Al-In Alloys Under Microgravity Conditions, Claude Potard, L.E.S., CEN-G, France


2:50 Gravitationally Induced Convection During Directional Solidification of Off-Eutectic Mn-Bi Alloys, Ron G. Pirch, Grumman Aerospace Corp.

3:10 BREAK

3:30 The Effect of Solute on the Homogeneous Crystal Nucleation Frequency in Metallic Melts, C. V. Thompson and P. Sassen, Harvard University

POSTER SESSION

Wednesday, November 18 — Bay State Room
1:30–4:00 PM

P-1 Acoustic Positioning and the Response of Large Liquid Drops in Low Gravity, A. P. Cronquist, D. D. Elleman, N. Jacobi, T. G. Wang, Jet Propulsion Lab

P-2 Electrostatic Levitation Device at JPL, W. K. Rhim, M. Saffren and D. D. Elleman, Jet Propulsion Lab

P-3 Air Jet Levitation Furnace System for Observing Glass Microspheres During Heating and Melting, E. C. Ethridge, Marshall Space Flight Center and S. A. Dunn, Bjorksten Research Laboratory, Madison, WI


P-5 Low-Gravity Solidification Structures in the Sn-15wt%Pb and Sn-3wt%Bi Alloys, M. H. Johnston and R. A. Parr, Marshall Space Flight Center

P-6 Compound Semiconductor Crystal Growth by Physical-Vapor Transport, John A. Zoutendyk and Wesley M. Akutagawa, Jet Propulsion Laboratory

P-7 Defect Structure Analysis of Polycrystalline Materials by Computer Controlled Double Crystal Diffractometer and Position Sensitive Detector, S. Weissmann, W. Mayo, R. Yazici and T. Take moto, Rutgers University

P-8 Thermophysical Properties of Germanium for Thermal Analysis of Growth From the Melt, R. K. Crouch, A. L. Fripp, W. J. Debnam, NASA Langley Research Center; R. E. Taylor and H. Groot, CINDAS - Purdue University

P-9 Anomalous Behavior in the First to Freeze Region in Directionally Solidified Pd_{1-x}Sn_{x}Te, A. L. Fripp, R. K. Crouch, W. J. Debnam and I. O. Clark, NASA Langley Research Center; T. I. Ejim, University of Virginia

SYMPOSIUM H
APPLICATION OF SYNCHROTRON RADIATION TO MATERIALS SCIENCE

Chairmen:
J. B. Hastings, NSLS, Brookhaven National Laboratory, Upton, NY
J. Stohr, Exxon Research and Engineering Co., Linden, NJ

November 16 – 18, 1981

Monday, November 16 – Parlor B
X-RAY FLUORESCENCE AND SCATTERING
Chairman: J. B. Hastings

8:30—An X-ray Fluorescence Microprobe for Materials Research, C. J. Sparks, Jr., Metals and Ceramics Division, Oak Ridge National Laboratory, Oak Ridge, TN

9:20—The Application of Powder Diffraction to Structural Studies, D. E. Cox, Physics Department, Brookhaven National Laboratory, Upton, NY

10:10—COFFEE BREAK

PHOTON STIMULATED ION DESORPTION
Chairman: J. Stohr

10:30—Photon Stimulated Desorption – Mechanistic and Applications, M. L. Knotek, Sandia National Laboratories, Albuquerque, NM

11:20—Photon Stimulated Ion Desorption as a Probe for Surface EXAFS: Potential and Limitations, R. Jaeger, Stanford Synchrotron Radiation Laboratory, Stanford University, Stanford, CA

12:10—LUNCH


2:20—Photon Stimulated Ion Desorption from the Surface of Molecular Solids, R. A. Rosenberg, A. K. Green, V. Rehn, Michelson Lab, NWC, China Lake, CA; G. Louvrier, Sandia Labs, Albuquerque, NM; C. C. Parks, LBL and University of California, Berkeley, CA

2:40—Photon Stimulated Desorption of H+ Ions from GaAs(110)/H2O, G. Thornton, University of Manchester, UK; R. A. Rosenberg, V. Rehn, A. Green, Michelson Lab., NWC, China Lake, CA; C. C. Parks, University of California, Berkeley, CA

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3:00—The Interaction of CH\textsubscript{3}OH with a Ti (001) Surface Investigated Using Photostimulated Desorption UV Photoemission Spectroscopy, D. M. Hanson, R. L. Stockbauer, T. E. Haday, National Bureau of Standards, Washington, DC

3:20— BREAK

TOPOGRAPHY
Chairman: C. J. Sparks


4:30—X-ray Plane Wave Analysis of MBE Grown Ag Layers Over GaAs Substrates, Michele Sauvage, LURE, bat. 209c, UPS, 91405 Orsay-cedex France and J. Massies, LCR-Corbville, Thomson-CSF, BP10, 91405, Orsay, France

4:55—New Techniques in X-ray Topography and Radiography with Synchrotron Radiation, D. Keith Bowen and Samuel T. Davies, Daresbury Laboratory, Warrington, UK and University of Warwick, Coventry, UK

Tuesday, November 17 — Parlor B

X-RAY DIFFRACTION
Chairman: D. E. Cox

8:30—Energy Dispersive Diffraction from Powder Specimens at High Pressures, Millard Baublitz, Jr., Polaroid Corporation, Cambridge, MA


10:10— COFFEE BREAK

PHOTOEMISSION
Chairman: D. Norman

10:30—Photoemission from the Bulk and from Clean Surfaces, F. J. Himpsel, IBM Thomas J. Watson Research Center, Yorktown Heights, NY


11:45—Studies of Photoelectron Diffraction, Angle-Resolved Photoemission, and Threshold Effects in Auger Spectroscopy in a Novel Energy Region: 800-4500 eV, Zahid Hussain, Materials and Molecular Research Division, Lawrence Berkeley Laboratory, Berkeley, CA

12:35— LUNCH

2:00—Angle Resolved Photoemission from Adsorbates, W. Eberhardt, Brookhaven National Laboratory, Upton, NY

2:50—Photoemission Studies of Nickel and Palladium Silicides with Synchrotron Radiation, Y. J. Chabal, A. Franciosi, J. H. Weaver, J. E. Rowe and J. M. Poate, Bell Laboratories, Murray Hill, NJ and Synchrotron Radiation Center, University of Wisconsin, Madison, WI
3:15—Spin Polarized Photoemission and GEV Satellite of N, R. Clauser, W. Gudat, E. Kisker, E. Kuhlmann, and G. M. Rothberg, Institut fur Festkorperforschung, KFA, Julich, Germany

3:40—BREAK

ANOMALOUS SCATTERING
Chairman: P. Eisenberger

4:00—Structural Studies of Disordered Materials Using X-ray Anomalous Scattering, Paul Fuoss, Bell Laboratories, Murray Hill, NJ


Wednesday, November 18 — Parlor B

INFRARED SPECTROSCOPY AND SURFACE X-RAY SCATTERING
Chairman: P. H. Citrin

8:30—Infra-Red Spectroscopy at the National Synchrotron Light Source, Gwyn P. Williams, National Synchrotron Light Source, Brookhaven National Laboratory, Upton, NY

9:20—X-ray Scattering Studies of Surfaces, P. Eisenberger, Exxon Research and Engineering Co., Linden, NJ; W. Marra and P. Fuoss, Bell Laboratories, Murray Hill, NJ

10:10—COFFEE BREAK

SEXAFS AND EXAFS
Chairman: R. Jaeger

10:30—SEXAFS Studies of Cl and Te Adsorbed on Semiconductor and Metal Surfaces, P. H. Citrin, J. E. Rowe, P. Eisenberger, Bell Laboratories, Murray Hill, NJ

11:20—X-ray Absorption Near-Edge Structure (XANES) and the Structure of Surfaces, P. J. Durham, J. B. Pendry and D. Norman, Daresbury Laboratory, Science and Engineering Research Council, Daresbury, Warrington, UK

12:10—X-ray Absorption-Edge Studies of a Pt Catalyst Supported on Carbon, D. M. Pease, Department of Physics and Institute of Materials Sciences, University of Connecticut, Storrs, CT; F. A. Otter, United Technologies Research Center, East Hartford, CT; J. I. Budnick and G. Hayes, Physics and IMS, University of Connecticut, Storrs, CT

12:35—X-ray Absorption Spectroscopy and EXAFS of Pt/TiO2 Catalysts, D. R. Short and J. R. Katzer, Center for Catalytic Science and Technology, University of Delaware, Newark, DE; A. Mansour and D. E. Sayers, Department of Physics, North Carolina State University, Raleigh, NC

1:00—ADJOURN
SYMPOSIUM I
MICROSCOPY AND CHEMICAL ANALYSIS OF SEGREGATION AND CLUSTERING IN CRYSTALLINE SOLIDS

Chairmen:
D. A. Smith and W. Krakow, IBM Thomas J. Watson Research Center, Yorktown Heights, NY
November 16, 1981

SESSION I-1
Room 433
Chairman: W. Krakow, IBM T. J. Watson Research Center, Yorktown Heights, NJ
9:00—*Segregation and Clustering in Metals, V. Vitek, University of Pennsylvania, Philadelphia, PA
9:40—*Segregation and Clustering in Non-Metals, R. M. Cannon, MIT, Cambridge, MA
10:20—BREAK
10:40—*Imaging of Strain-fields, C. B. Carter, Cornell University, Ithaca, NY
11:25—*Chemical Analysis at High Resolution, D. B. Williams, Lehigh University, Bethlehem, PA

SESSION I-2
Room 433
Chairman: D. A. Smith, IBM
2:00—Incubation Times and Size Distributions for Vacancy Clusters in Several Fe-Base Alloys: I. Experiment, J. N. McGrue and J. R. Townsend, University of Pittsburgh, Pittsburgh, PA; J. A. Spitznagel, S. Wood, and N. J. Doyle, Westinghouse Research and Development Center, Pittsburgh, PA; W. J. Choyke, University of Pittsburgh and Westinghouse Research and Development Center, Pittsburgh, PA
2:20—Incubation Times and Size Distributions for Vacancy Clusters in Several Fe-Base Alloys: II. Theory, C. A. Parker, MIT, Cambridge, MA
2:40—*Field-ion Microscopy of Segregation and Clustering, T. T. Tsong, Pennsylvania State University, University Park, PA
3:20—BREAK
3:40—*Electron Microscopy of the Interaction of Point Defects with Dislocations in Silicon, D. Cherns, Oxford University, Oxford, UK
4:20—Electron Microscopy of Antimony Implanted Silicon, A. P. Pogany, Royal Melbourne Institute of Technology, Melbourne, Australia
4:40—Redistribution of Oxygen and Precipitation within Damage Regions of Ion-Implanted Silicon, T. J. Magee,
SYMPOSIUM J
POLYMERS AS ELECTRONIC MATERIALS
Chairman: J. Mort, Xerox Corporation
Monday, November 16 — Parlor C

8:30-9:30 Electronic States in Polymers, J. Ritsko, Xerox Corporation
9:30-10:30 Optical Studies of Doped Polymers, D. Haarer, University of Bayreuth
10:30-11:00 COFFEE BREAK
11:00-12:00 Electronic Properties of Photoconductive Polymers, J. Mort, Xerox Corporation
12:00-1:30 LUNCH
1:30-2:30 Polymers in Electrophotography, W. Mey, Eastman Kodak Corporation
2:30-3:30 Piezo and Pyroelectricity in Polymers, M. Brodhurst, National Bureau of Standards
3:30-4:00 BREAK
4:00-5:00 Metallic and Semiconducting Complexes of Organic Polymers, R. H. Baughman et al, Allied Corporation

Contributed Papers:
5:00-5:15 Electrical Properties of Ion Implanted Poly(p-phenylene sulfide), J. S. Abel, H. Mazurek, D. Day, E. W. Maby, S. D. Senturia, G. Dresselhaus and M. S. Dresselhaus, Massachusetts Institute of Technology
5:15-5:50 Cadmium Sulfide-Polyacetylene Photovoltaic Junctions, M. Rolland, M. Cadene, M. Aldissi and F. Schue, Universite des Sciences et Techniques du Languedoc, Montpellier, Cedex, France

SYMPOSIUM K
SOLID STATE TRANSDUCERS
Chairmen: S. C. Chang, GM Research Laboratories
W. H. Ko, Case Western University
November 18-19, 1981
SESSION K-1
GENERAL CONSIDERATION OF SOLID STATE TRANSDUCERS
Chairman: Wen H. Ko, Case Western Reserve University
Cleveland, OH
Wednesday Morning, November 18 – Room 436

8:30—Opening Remarks: S. C. Chang and W. H. Ko
8:45—*Signal Conversion in Solid-State Transducers, S. Middelhoek and D.J.M. Noorlag, Delft University of Technology, Delft, The Netherlands
9:15—*Integrated Silicon Sensors: Interfacing Electronics to a Nonelectronic World, K. D. Wise, The University of Michigan, Ann Arbor, MI
9:45—*VLSI and Intelligent Transducers, W. H. Ko and C. D. Fung, Case Western Reserve University, Cleveland, OH

10:15—COFFEE BREAK

SESSION K-2
PHYSICAL TRANSDUCERS
Chairman: J. N. Zemel, University of Pennsylvania, Philadelphia, PA
Wednesday Morning, November 18 – Room 436

10:30—*Magnetic-Field Sensitivity of Two-Collector Transistor Structures, V. Zieren and S. Middelhoek, Delft University of Technology, Delft, The Netherlands
11:30—*Thin Film Temperature Sensors Based on Silicon, S. J. Fonas, M. D. Aggarwal, S. Ashok, The Pennsylvania State University, University Park, PA; W. Hurst, National Bureau of Standards
12:00—*A Solid-State Dew-Point Sensor, P. P. L. Reptien, Delft University of Technology, Delft, The Netherlands

*Invited Talk

SESSION K-3
GAS SENSORS
Chairman: S. C. Chang, G.M. Research Lab., Warren, MI
Wednesday Afternoon, November 18 – Room 436

2:00—*Semiconductor Gas Sensors, S. R. Morrison, SRI International, Menlo Park, CA
2:30—*Homogeneous Semiconducting Gas Sensors, G. Heiland, Physikalisches Institut der Rheinisch-Westfälischen Technischen Hochschule Aachen, Aachen, Germany
3:00—BREAK

4:00—Thin Solid State Electrochemical Gas Sensors, G. Velasco, J. P. Schnell, M. Croset, Laboratoire Central de Recherches, Orsay, France

4:30—Sulfur Dioxide Sensors Using Solid Sulfate Electrolytes, Wayne L. Worrell, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA

*Invited Talk

Wednesday Evening, November 18 — Room 436
8:00—10:00 P.M.
Panel Discussion
TRANSDUCER NEEDS AND APPROACHES IN VARIOUS SECTORS

Moderator: W. H. Ko, Case Western Reserve University, Cleveland, OH
Panel Members: B. F. Spielvogel, U. S. Army Research Office, Research Triangle Park, NC
D. L. Nelson, Office of Naval Research Arlington, VA
J. F. Cassidy, General Electric Company Schenectady, NY
J. N. Zemel, University of Pennsylvania, Philadelphia, PA
P. W. Cheung, Case Western Reserve University, Cleveland, OH

SESSION K-4
PRESSURE TRANSDUCERS
Chairman: S. Middelhoek, Delft University of Technology Delft, The Netherlands

Thursday Morning, November 19 — Room 436

8:30—Miniature Capacitive Pressure Transducer, W. H. Ko, C. D. Fung, Case Western Reserve University, Cleveland, OH

9:00—A Special Silicon Diaphragm Pressure Sensor with High Output and High Accuracy, M. Shimazoe, et al., Naka Works, Hitachi Ltd., Katsuta, Japan

9:30—Hall Effect Devices as Strain and Pressure Sensors, Y. Kanda, Hamamatsu University School of Medicine, Hamamatsu, Japan

10:00—COFFEE BREAK

10:30—Cantilever Type Displacement Sensor Using Diffused Silicon Strain Gauges, M. Ai, et al., Hitachi Research Laboratory, Ibaraki, Japan

11:00—An Integrated Pressure Transducer for Biomedical Applications, X. P. Wu, Fudan University, Shanghai, People’s Republic of China

11:30—Multiple Pressure Sensor Catheter for Biomedical Use, T. Matsuo, et al., Tohoku University, Sendai, Japan
SESSION K-5
ION SENSORS
Chairman: P. W. Cheung, Case Western Reserve University
Cleveland, OH
Thursday Afternoon, November 19 — Room 436
1:30—*New Solid Electrolyte for Sensor Applications, G. C. Farrington, University of Pennsylvania, Philadelphia, PA
2:00—*Aluminum Oxide pH Sensor, P. W. Cheung, Case Western Reserve University, Cleveland, OH
2:30—*Prototype Sodium and Potassium Sensitive Micro-SFET’s, Y. Ohta, S. Shoji, M. Esashi and T. Matsuo, Tohoku University, Sendai, Japan
3:00— BREAK
3:30—*Ion Sensitive Diodes, J. N. Zemel and I. R. Lauks, University of Pennsylvania, Philadelphia, PA
4:00—*Interface State Properties of Electrolyte-Silicon Dioxide-Silicon Structures, P. R. Barabash and R. S. C. Cobbold, University of Toronto, Toronto, Canada
*Invited Talk

SYMPOSIUM L
CONFERENCE ON IN SITU COMPOSITES — IV
Chairmen:
Dr. Malcolm McLean, National Physical Laboratory
Teddington, Middlesex, England
Dr. F. D. Lemkey, United Technologies Research Center
East Hartford, CT
Dr. H. E. Cline, General Electric Research & Development
Schenectady, NY
November 16-19, 1981

SESSION I
HIGH TEMPERATURE STRUCTURAL EUTECTIC ALLOYS
Session Chairman: E. Thompson, United Technologies Research Center, E. Hartford, CT
Monday Morning, November 16 — Room 436
9:00 *1. Mechanical Properties of Eutectic Superalloys For Gas Turbine Blades, M. McLean, National Physical Laboratory, Teddington, Middlesex, England
9:50 3. The Quaternary System Fe-Cr-Mn-C and Aligned Ferrous Superalloys, H. Nowotny, University of Connecticut; E. R. Thompson and F. D. Lemkey, United Technologies Research Center, E. Hartford, CT
10:15 COFFEE BREAK

10:55 5. The Fatigue Behavior of Three Advanced Nickel-Based Eutectic Composites, T. Ishii, K. Dannewann, D. J. Duquette and N. S. Stoloff, Rensselaer Polytechnic Institute, Troy, NY


12:10 LUNCH

*Invited Talk

SESSION II
MECHANICAL PROPERTIES

Session Chairman: M. F. X. Gigliotti, General Electric Corporate Research & Development, Schenectady, NY

Monday Afternoon, November 16 — Room 436

2:00 1. The Effect of Solidification Rate on Fiber Distribution and Mechanical Properties of a Directionally Solidified Nickel Base-TiC Eutectic, J. L. Walter, General Electric Corporate Research and Development, Schenectady, NY


3:15 COFFEE BREAK


3:35 5. Growth and Thermal Stability of γ/γ'-o-Eutectic Composite, Y. G. Nakagawa, Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan; M. Nemoto, Tohoku University, Japan
SESSION III
PHYSICAL PROPERTIES AND STRUCTURE
Session Chairman: W. Tiller, Stanford University, Stanford, CA
Tuesday Morning, November 17 – Room 436

9:00 1. In Situ Composite Field Emitter Arrays, A. Chapman, Georgia Institute of Technology, GA

9:20 2. Selective Etching and Laser Melting Studies of Monotectic Composite Structures, L. M. Angers, Northwestern University, Evanston, IL; R. N. Grugel and A. Hellawell, Michigan Technological University, Houghton, MI; C. W. Draper, Western Electric Company, Princeton, NY

9:40 3. Submicron Eutectic Thin Film Structure, H. E. Cline, General Electric Corporate Research & Development, Schenectady, NY

10:00 COFFEE BREAK

10:15 4. The SnSe-SeSe2 Semiconductor Eutectic, A. S. Yue and J. G. Yu, University of California, Dept. of Materials Science and Engineering, School of Engineering and Applied Science, Los Angeles, CA

10:35 5. Dendrite-Eutectic Transition at Low and High Growth Rates, V. Laxmanan, Allied Chemical, Corporate Technology, Morristown, NJ

10:55 6. Directionally Crystallized Potassium Silicate Glass-Ceramic, Grant Lu and L. C. Klein, Ceramics Dept., Rutgers University, Piscataway, NY

11:15 7. In Situ Electron Microscopy of Solidifying Metallic, Eutectic Alloys, Clement Lemaignan and Joseph Pelissier, Centre d’Etudes Nucleaires de Grenoble, Grenoble Cedex, France


11:55 LUNCH
SESSION IV
COMPOSITE STRUCTURE

Session Chairman: B. F. Oliver, University of Tennessee, Knoxville, TN
Tuesday Afternoon, November 17 – Room 436

2:00 *1. In Situ Composites Prepared by Mechanical Techniques, J. D. Verhoeven, Ames Laboratory and Department of Materials Science and Engineering, Iowa State University, Ames, IA

2:25 2. Mechanical and Superconducting Properties of Cu-Nb3Sn In Situ Produced Composite Wires, A. Kolb-Tellips and B. L. Mordike, Institut fur Werkstoffkunde und Werkstofftechnik der Technischen, Universität Clausthal, West Germany

2:50 3. The Long Term, Lower Temperature Structural Stability of the Eutectic Composites Cd-Zn and Pb-Cd, R. H. van de Merwe, G. D. Delamore and R. W. Smith, Queen’s University, Kingston, Canada

3:15 COFFEE BREAK

3:30 4. The High Temperature Degradation of Cd-Zn and Pb-Cd Eutectic Alloys, R. H. van de Merwe and R. W. Smith, Queen’s University, Kingston, Canada


4:20 6. The Response of MnSb-Sb Composites to Isothermal Aging, T. F. Marinis, Bell Telephone Laboratories, Allentown, PA; R. F. Sekerka, Head, Dept. of Metallurgy and Materials Science, Carnegie-Mellon University, Pittsburgh, PA


5:10 End

*Invited Talk
SYMPOSIUM M
MAGNETIC AND OPTICAL MATERIALS FOR INFORMATION STORAGE

Chairman: Theodore Davidson, Xerox Corporation, Webster, NY

November 18-19, 1981

MAGNETICS SESSION
Wednesday, November 18 — Parlor B

1300 Keynote Lecture: Magnetic Recording Materials: New Developments Promise Large Increases in Information Storage Density, Denis Spelliotis, Advanced Development Corp., Lexington, MA


1420 Compositional Analysis of Pattern-Plated Permalloy Films, O. Muller, G. Scilla and R. Fernquist, Xerox Corporation, Webster, NY

OPTICAL MATERIALS SESSION

1440 Testing of Optical Disk Materials for Use by the Computer Industry, M. Capote, R. Hazel, Y. Kohanzadeh and P. Shepherd, Burroughs Corp., Westlake Village, CA

1500 COFFEE BREAK

1520 Laser Writing in Novel Bilayer Structures, K. Y. Ahn, T. H. DiStefano and N. J. Mazzeo, IBM Research Laboratory, Yorktown Heights, NY

1540 Structure and Reflectivity Changes in Novel Bilayer Optical Media, S. R. Hard, K. N. Tu and K. Y. Ahn, IBM Research Laboratory, Yorktown Heights, NY

1600 Degradation of Optical Recording Media in the SEM, C. M. Shavlin and R. E. DeLong, Optical Coating Laboratory, Inc., Santa Rosa, CA

Thursday, November 19 — Parlor B

0900 Keynote Lecture: A Review of Optical Recording Media, Alan Bell, Exxon Corporate Research Laboratories, Linden, NJ

1000 Optical Data Disk Substrate, M. Temple, T. Mayer and J. Rancourt, Optical Coating Laboratory, Inc., Santa Rosa, CA

1020 Microscopically Textured Optical Storage Media, H. G. Craighead and R. E. Howard, Bell Laboratories, Holmdel, NJ

1040 COFFEE BREAK
1100 Laser Marking of Thin Organic Films, Allan B. Marchant and Joseph J. Wrobel, Kodak Research Laboratories, Rochester, NY

1130 Photochromic Switching in Organic Semiconductors, Susan C. Dahlberg, Bell Laboratories, Murray Hill, NJ

1200 LUNCH

1330 A Thermal Analysis of Hole Forming Process on Ablative Film Optical Disks, R. A. LaBudde and C. Carlino, Burroughs Corp., Westlake Village, CA

1350 A Simple Model for the Deterioration of a Tellurium Optical Disk, Edward V. LaBudde, Burroughs Corp., Westlake Village, CA

1410 PANEL DISCUSSION:
Current Issues in Materials for Information Storage

SYMPOSIUM N
EFFECTS OF FLYASH INCORPORATION IN CEMENT AND CONCRETE

Chairpersons:
S. Diamond, Purdue University
Della M. Roy, Penn State University

November 16-18, 1981

SESSION N-1
FLYASH CHARACTERIZATION

Chairman: D. M. Roy, Penn State University,
University Park, PA

Monday Morning, November 16 — Room 437

9:00—Welcome from Symposium Chairpersons; Administrative Remarks
9:15—*Production and Collection of Flyash for Use in Concrete, D. Ravina, Technion, Israel
9:55—*Flyash Characterization, S. Diamond, Purdue University, West Lafayette, IN
10:35 — BREAK
10:50—Physical and Chemical Behavior of Selectively-Etched Flyashes, B. E. Scheetz, D. W. Strickler, M. W. Grutzeck and D. M. Roy, Pennsylvania State University, University Park, PA
11:15—Properties of Flyashes Used in the German Federal Republic, K. Wesche and W. vonBerg, Technical University Aachen, Aachen, German Federal Republic
11:40—On the Distinction in Physical and Chemical Characteristics Between Lignitic and Bituminous Fly Ashes, S. Diamond and F. Lopez-Flores, Purdue University, West Lafayette, IN
SESSION N-2
HYDRATION REACTIONS AND MICROSTRUCTURE I

Chairman: G. M. Idorn, G. M. Idorn Consult ApS, Denmark

Monday Afternoon, November 16 — Room 437

1:40—Chairman’s Remarks
1:45—Pastes of Tricalcium Silicate With Flyash- Analytical Electron Microscopy, Trimethylsilylation, and Other Studies, K. Mohan and H. F. W. Taylor, University of Aberdeen, Aberdeen, Scotland
2:10—Interaction of Flyash With Calcium Silicates During Hydration, I. Jawad and J. Skalny, Martin Marietta Laboratories, Baltimore, MD
3:00—BREAK
3:40—Pore Structure Formation During Hydration of Flyash and Slag Cement Blends, R. F. Feldman, National Research Council Canada, Ottawa, Canada
4:05—Hydration Reactions of a Class C Flyash - The First Three Days, E. R. Dunston, Dunston Laboratories, Denver, CO
4:30—Modifications of the Cement Paste-Aggregate Interfacial Region Due to Additions of Fly Ash or Silica Fume, A. Carles-Gibergues, J. Grandet and J. P. Ollivier, I.M.S.A.-U.P.S., Toulouse, France
4:55—Combined Lime and Specific Surface Area of the Hydration Products of Lime-Pozzolana and Lime-Flyash Mixes, G. Tognon and P. Ursella, Italcementi, Bergamo, Italy

SESSION N-3
HYDRATION REACTIONS AND MICROSTRUCTURE II

Chairman: H. F. W. Taylor, University of Aberdeen, Aberdeen, Scotland

Tuesday Morning, November 17 — Room 437

9:00—Chairman’s Remarks
9:05—Comparative Studies of Reaction in Lignitic and in Bituminous Flyash Pastes, S. Diamond and F. Lopez-Flores, Purdue University, West Lafayette, IN
9:30—Reactions in High-Lime Cement Composites, M. W. Grutzneck, B. E. Scheetz and D. M. Roy, Pennsylvania State University, University Park, PA


10:20—BREAK

10:35—Flyash in Cement Pastes: Some Effects of Particle Size and Distribution, D. G. Montgomery, University of Wollongong, Wollongong, Australia

11:00—Effect of Reaction Between PFA and Calcium Hydroxide on Concrete Properties, F. G. Buttel, Teeside Polytechnic, Middlesborough, Cleveland, England

11:25—Cementitious Properties of a Lignite Flyash: Hydration Mechanism and Utilization as Cement in Road Bases, A. Carles-Gibergues, I.N.S.A. - U.P.S., Toulouse, France

11:50—LUNCH

*Invited Talk

SESSION N-4

PROPERTIES OF CONCRETE CONTAINING FLYASH I

Chairman: C. D. Pomeroy, Cement and Concrete Association, England

Tuesday Afternoon, November 17 — Room 437

1:30—Chairman’s Remarks

1:35—*Effects of Various Types of Flyash on Behavior and Properties of Concrete, Craig J. Cain, American Flyash Corp., Chicago, IL


2:40—Improved Utilization of Flyash in Concrete Through A Chloride-Free Accelerator, S. Popovics, Drexel University, Philadelphia, PA

3:05—BREAK

3:20—The Distinction Between Water Reduction and Reactivity as Factors Influencing Flyash Performance in Concrete, W. R. Barker, Darling and Hodgson Construction Materials (Pty.) Ltd., Transvaal, South Africa

3:45—Fly Ash Concrete Under Hot Weather Conditions, D. Ravina, Technion, Haifa, Israel

4:10—Properties of Mortars and Concretes Made with Flyash, K. Wesche and R. Schubert, Technical University Aachen, Aachen, German Federal Republic

4:35—Performance Characteristics of Concretes Containing Flyash, V. Ramakrishnan, W. V. Coyle, J. Brown, P. A. Thustus and P. Venkataramanujam, South Dakota School of Mines and Technology, Rapid City, SD

*Invited Talk
SESSION N-5
PROPERTIES OF CONCRETE CONTAINING FLYASH II
Chairman: Vance R. Dodson, W. R. Grace and Co.,
Cambridge, MA

Wednesday Morning, November 18 – Room 437

9:00—Chairman’s Remarks
9:05—Structural Properties of Flyash Concrete, R. N.
Swamy, University of Sheffield, Sheffield, England
9:30—Properties of Flyash Concrete, Roselle D. Crow,
Bureau of Reclamation, Denver, CO
9:55—Moisture-Related Movements in OPC/PFA Con-
crete, L. T. Ong, J. G. L. Munday and R. K. Dhir,
University of Dundee, Dundee, Scotland

10:20—BREAK

10:35—The Strength Contribution of Flyash to Concrete -
A New Approach to Its Estimation, Vance R. Gordon,
W. R. Grace and Co., Cambridge, MA

*Invited Talk

SESSION N-6
BLENDED CEMENTS, STANDARDIZATION, AND
RESEARCH NEEDS
Chairman: Sidney Diamond, Purdue University,
West Lafayette, IN

Wednesday Afternoon, November 18 – Room 437

1:30—Chairman’s Remarks
1:35—International Aspects of the Development of Uses
of Flyash With Cement, G. M. Idorn, G. M. Idorn Con-
sult ApS, Naerum, Denmark

2:15—American and Foreign Characterization of Flyash
For Use in Concrete, O. E. Manz, University of North
Dakota, Grand Forks, ND

2:40—Effects of Grinding on Properties of Flyash Cemen-
tes, B. Osbaeck, F. L. Smidth and Co., A/S, Copen-
hagen, Denmark

3:05—BREAK

3:20—Use of Silica Fumes in Cement and Concrete, P.-C.
Aitcin, University of Sherbrooke, Sherbrooke, Canada

3:45—Effects of Indian Flyashes on Development and
Optimization of Blended Cements and Concretes, S. K.
Sval and S. S. Kataria, University of Illinois, Urbana,
IL and Feeders India Consultants, New Delhi, India

4:10—Development of Cementitious Materials from Waste
Lead Slags, R. A. McCauley, B. Fasano and W. H. Bauer,
Rutgers University, New Brunswick, NJ

4:35—General Discussion and Symposium Summary

*Invited Talk
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