Gordon Research Conferences, Winter Program, 1974

Alexander M. Cruickshank

The Winter Gordon Research Conferences will be held 7 to 25 January 1974 in Santa Barbara, California, at the Miramar Hotel.

Purpose. The Conferences were established to stimulate research in universities, research foundations, and industrial laboratories. This purpose is achieved by an informal type of meeting consisting of scheduled speakers and discussion groups. Sufficient time is available to stimulate informal discussion among the members of each conference. This type of meeting is a valuable means of disseminating information and ideas to an extent that could not be achieved through the usual channels of publications and presentation at scientific meetings. In addition, scientists in related fields become acquainted and valuable associations are formed that often result in collaboration and cooperative efforts among laboratories.

Meetings are held in the morning and in the evening, Monday through Friday, with the exception of Friday evening. The afternoons are available for recreation, reading, or participation in discussion groups, as the individual desires.

It is hoped that each conference will extend the frontiers of science by fostering a free and informal exchange of ideas among persons actively interested in the subject under discussion. The purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments, and to provoke suggestions concerning the underlying theories and profitable methods of approach for scientific research. The review of known information is not desired.

In order to protect individual rights and promote discussion it is an established requirement of each conference that no information presented is to be used without specific authorization of the individual making the contribution, whether in formal presentation or in discussion. The recording of lectures by tapes, and so forth, and the photography of slides are prohibited. Scientific publications are not prepared as emanating from the Conferences.

Registration and reservations. Attendance at the Conferences is by application.

Applications must be submitted in duplicate on the standard application form which may be obtained from the office of the Director. This procedure is important because certain specific information is required in order that a fair and equitable decision on the application may be made. Attendance at each conference is limited to approximately 100 conferees.

The Director will submit the applications of those requesting permission to attend a conference to the committee for that conference. This committee will review the applications and select the members in an effort to distribute the attendance as widely as possible among the various institutions and laboratories represented by the applications. A registration card will be mailed to those selected. Advance registration by mail for each conference is required and is completed on receipt of the card and the deposit of $30. This advance deposit is not required from foreign scientists. Checks are to be made payable to the Gordon Research Conferences. The deposit will be credited against the fixed fee for the conference. *A registration card not accompanied by the deposit will not be accepted.*

The Board of Trustees of the Conferences has established a fixed fee of $150 for conferees covering registration, double room with bath, City of Santa Barbara room tax, meals, and services for five conference days. It will not provide for golf, telephone, taxi, laundry, conference photograph, or any other personal expenses. The fixed fee was established to encourage attendance for the entire conference and to increase the special fund that is available to each conference chairperson for the purpose of assisting conferees who attend a conference at total or partial personal expense with their travel or subsistence expenses or with both.

It is to the advantage of all participants to attend a conference for the entire week. The fixed fee will be charged regardless of the time a conferee attends the conference—that is, for the periods of from 1 to 4½ days. It is divided as follows: registration fee $50, room and meals $100 including services, for five conference days. An additional charge will be made for a single room if no double rooms or roommates are available. These rooms will be assigned in the order that applications are received. An additional charge will be made for rooms occupied more than five conference nights (Sunday through Thursday).

Guests. Accommodations are available for guests and for children 12 years of age and over. All such requests should be made at the time the attendance application is submitted. The charge for room and meals for a guest is $100 for five conference days. A deposit of $30 is required for each guest reservation. Guests are not permitted to attend the conference lectures. This deposit will be refunded if cancellation is received 2 weeks prior to the conference.

Special fund. A special fund is provided from the registration fee and is made available to the chairperson of each conference for the purpose of increasing the participation of research scientists who could not otherwise attend and participate because of financial limitations. Its use is not limited to speakers and discussion leaders, but may be granted to any registered conferee by the chairperson. The money is to be used as an assistance fund only and may be used to contribute toward conferees' travel expenses, registration fee, and/or subsistence expenses at the conference location. Total travel and subsistence expenses usually will not be provided.

Cancellation. The conferee deposit is forfeited if an approved application is cancelled. *This deposit is not transferable to another conference or conferee.*

Membership. Requests for membership in the Conferences or for additional information should be addressed

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The program for the Conferences is as follows:

Chemical Oceanography

H. Gote Ostlund, *chairman*; Grant Gross, *vice chairman.*

14 January. Opening remarks. Distribution and composition of particulate matter (Derek Spencer, session chairman): Susumo Honjo, "Nature and distribution of particles in the ocean as seen by scanning electronic microscopy"; Victor Noshkin, "Role of particulate matter in the distribution of radionuclides in the ocean"; Derek Spencer, "Comments on the minor elements in oceanic suspended matter." Sediment/water interactions (Neil Andersen, session chairman): Rolland Wollast, "Recycling of nutrients from sediments"; Edward D. Goldberg, "The generation of gases in sediments"; Frederick Sayles, "Inorganic composition and reactions occurring in sediment interstitial waters."

15 January. Air/sea exchange of matter (Robert Duce, session chairman): Roger Chesselet and Robert Duce, "Chemical fractionation during particle production at the air-sea interface—pros and cons." Continental sources (Grant Gross, session chairman): J. R. Schubel, "Oceanographic consequences of tropical storm Agnes on Chesapeake Bay and nearby waters"; E. D. Goldberg, "Predicting ocean pollution."

16 January. Tracers and hydrodynamics (Claes Rooth, session chairman): George Veronis, "Abyssal transport processes"; Claes Rooth, "Tracer evidence of exchange paths in the main thermocline." Silicon (Karl Turekian, session chairman): Karl Turekian, "The material balance of silicon at the earth's surface"; Kent Fanning, "Silicon in and out of sediments"; Harmon Craig, "Silicon, silicon-32, and alleged chemical analog in the water column."

17 January. Carbonate kinetics (Taro Takahashi, session chairman): Taro Takahashi, "Degree of saturation of calcite in the Atlantic Ocean"; Samuel Ben-Yaakov, "Calcite saturometer measurements in deep sea"; Robert Berner, "Kinetics of the calcite-seawater reaction"; John Morse, "Relationship between foraminifera lysocline and carbonate compensation depth"; Donald Langmuir, "Carbonate ion pairs in aqueous solutions"; R. M. Pytkowicz, "Equilibrium and the CO_2 system in seawater."

18 January. Chemical oceanography after GEOSECS (H. Gote Ostlund, session chairman): Arnold Bainbridge, "GEOSECS shipboard operations"; Wallace S. Broecker, "What have we learned so far from the Atlantic GEOSECS data?"

Electrochemistry

Stanley Bruckenstein, *chairman*; Manfred Breiter, *vice chairman.*

7 January. Bilayer membranes (S. W. Feldberg, discussion leader): Robert DeLevie, "Ion transport through ultrathin phospholipid membranes"; Stuart McLaughlin, "Charges and potentials at membrane solution interfaces—effect of divalent ions and salicylates"; Gabor Szabo, "Influences of bilayer membrane structure on ionic permeability"; Moishe Eisenberg, "Ionic pores in lipid bilayers induced by alamethicin"; Raynold Laprade, "Kinetics of carrier mediated transport-trinactin and valinomycin"; Stephen W. Feldberg, "Charge pulse studies of nonactin mediated transports in bilayer membranes."

8 January. Electrode solution interface (M. Breiter, discussion leader): Richard Buck, "Glass-solution interfaces studies by vector resolved impedance measurements from 10^{-3} to 10^5 Hz"; J. Ross MacDonald, "Frequency response of the binary solid electrolyte in the presence of electrode discharge"; D. O. Raleigh, "Electrode polarization and anion discharge in silver halide cells"; R. W. Powers, "Resistance measurements of beta alumina."

9 January. Rotating electrodes (S. Bruckenstein, discussion leader): W. John Albery, "Recent studies involving ring-disc and tube electrodes"; Mary Archer, "Photochemical and electrochemical investigations at a rotating semi-transparent disc electrode"; W. Vielstich, "Rotating electrodes under conditions of turbulent flow"; I. Epelboin, "Some recent hydrodynamics data using rotating electrodes (laminar and turbulent flows)."

10 January. Non-uniform current distribution (R. C. Alkire, discussion leader): John Newman, "Non-uniform current distribution and its significance in the interpretation of electrochemical phenomena"; Leonard Nanis, "Transient current distribution." Open session (M. Breiter, discussion leader).

11 January. Metal deposition (David K. Roe, discussion leader): E. Budevski, "Electrocrystallization of silver"; W. J. Lorenz, "The formation of monolayer metal films on electrodes."

Liquid Crystals

Julian F. Johnson, *chairman*; Edward M. Barrall II, *vice chairman.*

14 January. (G. W. Miller, session chairman): E. B. Priestley, "Light scattering from liquid crystals"; R. Chang, "Pretransitions and transitions in liquid crystals." (P. F. Levy, session chairman): J. O. Kessler, "Solid liquid crystals: some physical properties of supercooled mesophases."

15 January. (J. Knox, session chairman): R. T. Klingbiel, "Dielectric behavior of liquid crystals"; J. M. Pochan, "A structural interpretation of the rheo-optical properties of cholesteric liquid crystals." (B. J. Bulkin, session chairman): E. T. Samulski, "Polypeptide liquid crystals: microscopic and macroscopic properties."

16 January. (R. S. Porter, session chairman): Open session. (S. E. B. Petrie, session chairman): F. J. Kahn, "Optical storage in smectic liquid crystals."

17 January. (C. G. Wade, session chairman): S. Meiboom and Z. Luz, "Proton and deuteron NMR in smectic liquid crystals"; R. A. Kashnow, "Capacitance/voltage studies of liquid crystals electric field effects." (F. E. Bailey, session chairman): G. Brown, "Structure studies of liquid crystals that have influenced the development of the field."

18 January. (E. M. Barrall, session chairman): P. A. Penz, "Hydro-optic effects in nematics—a deeper look"; P. E. Cladis, "Critical divergence of the elastic constants near a smectic A transition."

Nonlinear Optics and Lasers

Paul L. Kelley, *chairman*; J. A. Armstrong, R. L. Byer, and J. Ducuing, *co-vice chairmen.*

7 January. Nonlinear mechanisms: D. Chemla, "Bond charge model calculation of third order susceptibilities"; A. Penzkofer, "Stimulated short wave radiation due to single frequency resonances of $\chi^{(3)}$." Nonlinear materials and nonlinear junctions: R. L. Byer

and R. L. Herbst, "Status report on nonlinear materials and tunable nonlinear sources"; A. Javan and A. Sanchez, "Point contact diodes for infrared frequency conversion."

8 January. Dielectric breakdown: N. Bloembergen, "Review of laser induced dielectric breakdown"; D. Milam, R. Bradbury, R. H. Picard, and M. Bass, "Difference between breakdown and inclusion laser damage statistics." Nonlinear optical effects in laser plasmas and astrophysics: J. Dawson, "Nonlinear optics in laser produced plasmas;" G. H. McCall, "Harmonic generation and frequency mixing in laser produced plasmas;" E. Yablonovich, "Production of ultrashort CO_2 laser pulses by means of a plasma nonlinearity."

9 January. Nonlinear optical propagation effects: D. Grischkowsky, "Pulse reshaping and adiabatic following"; A. Hasegawa, "Properties of stationary nonlinear optical pulses in dispersive media;" S. L. Shapiro, "Periodic structure in the patterns of self-focused optical beams;" A. P. Sukhorukov, "Studies of nonlinear propagation phenomena." High pressure and tunable infrared lasers: A. J. Alcock, "UV preionization of high pressure CO_2 lasers;" P. A. Wolff, "Spin nonlinearities in semiconductors."

10 January. UV and x-ray systems: D. M. Bloom, J. F. Young, and S. E. Harris, "Efficient third harmonic generation from 1.064 μm to 0.3547 μm"; A. Kung, S. E. Harris, and J. F. Young, "Generation of very short wavelengths by harmonic processes"; C. K. Rhodes, "Bound-free molecular gas lasers." Open session: it is intended that this session will include late papers as well as overflow from other sessions.

11 January. Physics and chemistry with picosecond pulses: R. Alfano, "Vibrational decay routes in liquids and solids"; J. Ducuing, "Excited state relaxation in rhodamine 6G"; P. Rentzepis, "Chemical studies with picosecond pulses"; K. Eisenthal, "Chemical reactions in the liquid state using picosecond laser pulses"; D. von der Linde, D. H. Auston, and A. M. Glass, "Subnanosecond multiphonon relaxation of divalent copper impurities in lithium tantalate."

Polymers

Roger S. Porter, *chairman*; Charles L. Sieglaff, *vice chairman*.

21 January. (Paul Lindenmeyer, discussion leader): Frank Bovey, "Carbon-13 NMR studies of polymer structure"; Elaine Petrie, "Molecular mobility in glassy polymer-diluent systems"; (John Maurer, discussion leader): Herman Mark, "Significant polymer events—worldwide."

22 January. (William MacKnight, discussion leader): Paul Flory, "Polymer conformation and configuration"; James McGrath, "Rigid block copolymers"; Fred Bailey and Tom Wilson, "Morphology and dynamic mechanical spectra of random and non-random olefin copolymers of ethylene." (Ted Provder, discussion leader): Mitchell Shen, "Polymers produced in gaseous plasma"; Jim Harwood, "Reactions of polymers."

23 January. (Jack Knox, discussion leader): Martin Broadhurst, "Piezo- and pyro-electric polymers"; J. M. Pearson, "Electrical properties of carbazole-containing polymers"; Richard Wallace, "The electret effect in desalination membranes." (Edward Collins, discussion leader): "On the chemistry and physics of polyurethanes." Plus open discussion.

24 January. (Kurt Wissbrun, discussion leader): John Aklonis, "Viscoelastic relaxation in the primary transition region"; Thor Smith, "Viscoelasticity of highly-crosslinked polymers"; Emory Menefee, "Relation among viscoelastic properties and molecular weight distribution for amorphous polymers." (Donald Vanas, discussion leader): Donald Lyman, "Studies of biomedical polymers in artificial organs."

25 January. (Charles Sieglaff, discussion leader): Gerry Ver Strate, "Ethylene-propylene elastomers"; William Graessley, "Long chain branching in polymers."

Thin Films and Solid Surfaces

Helmut Poppa, *chairman*; James F. Freedman, *vice chairman*.

21 January. (J. Freedman, discussion leader): A. Benninghoven, "The present status of SIMS and its usefulness for thin film and surface applications"; J. M. Morabito, "Selected area and in-depth analysis of thin films by AES and SIMS." (R. J. Musket, discussion leader): E. Taglauer, "Potential and applications of low energy ion backscattering"; M. A. Nicolet, "Potential and applications of high energy ion backscattering spectrometry."

22 January. (R. B. Marcus, discussion leader): J. W. Coburn, "The determination of elemental composition profiles in thin films by glow discharge mass spectrometry"; R. K. Wehner, "Compositional depth profiling with AES and in-situ sputtering." (N. C. MacDonald, discussion leader): E. K. Brandis, "SEM-Auger spectroscopy and thin film analysis of semiconductor structures"; J. R. Arthur, "Applications of low resolution scanning Auger microscopy to problems in molecular beam epitaxy."

23 January. (P. B. Needham, discussion leader): W. Bauer, "Application of proton induced x-ray (PIX) analysis for thin films"; P. B. Sewell, "The combined use of high energy electron diffraction and x-ray spectroscopy for thin film (and corrosion) studies." (R. W. Hoffman, discussion leader): D. A. Shirley, "ESCA as a surface tool."

24 January. (H. Poppa, discussion leader): E. Bauer, "Combined use of LEED, AES, SIMS, thermal desorption, and work function measurements for thin film growth studies"; K. Heinemann, "The application of advanced methods of transmission electron microscopy and in-situ TEM to the study of gas/surface and vapor/surface interaction mechanisms." (J. B. Hudson, discussion leader): R. J. H. Voorhoeve, "Kinetic measurements and the study of fundamental properties of thin films"; N. C. MacDonald, "Thin film applications of the scanning Auger microprobe."

25 January. (E. Kay, discussion leader): C. W. White, "Surface composition by analysis of impact radiation"; T. H. DiStefano, "UV photoemission and scanning internal photoemission measurements for thin film and interface studies."

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. The application blank on page 508 may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston 02881.