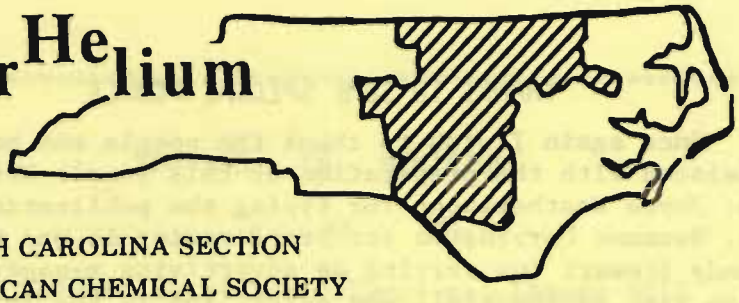
TarHelium



NORTH CAROLINA SECTION
AMERICAN CHEMICAL SOCIETY

Vol. 10, No. 8 Raleigh, NC April 1980

MEETING-IN-MINIATURE

at

The University of North Carolina, Chapel Hill

A P R I L 2 2, 1 9 8 0

PLENARY LECTURE

by

DR. JACOB I. TROMBKA

GODDARD SPACE FLIGHT CENTER

NASA

THANKS TO SOME SPECIAL PEOPLE

Once again I wish to thank the people who have assisted with the preparation of this year's TarHelium: Ms. Joyce Weatherspoon for typing the publication, Dr. Suzanne Purrington for proofreading it and Mr. Randy Stewart for serving as advertising manager. I also wish to thank all who advertised in the TarHelium.

AREA SEMINARS

Apr 11 Dr. A. GAUDEMER, University of Paris-Sud, Title to be announced, 3:30 pm, Room 130 Gross Chemical Laboratory, Duke.

16 Dr. BRUCE LOSEE, Philip Morris Research Center, "Surface Characterization of Supported Transition Metal Ion Catalysts," Phi Lambda Upsilon Lecture, 3:30 pm, Room 124 Dabney Hall, NCSU.

22 Dr. JACOB I. TROMBKA, NASA-Goddard Space Flight Center, Plenary Lecture, ACS Meeting-in-Miniature, 4:30 pm, Room 308 Venable Hall, UNC-CH.

23 Dr. GERHARD L. CLOSS, University of Chicago, "Short-lived Reaction Intermediates Studied by Time-Resolved and Other NMR Techniques," Venable Lecture, 8:00 pm, Room 207 Venable Hall, UNC-CH.

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MEETING - IN - MINIATURE

at

The University of North Carolina, Chapel Hill

April 22, 1980

Sponsored by

The North Carolina Section

of

The American Chemical Society

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PLENARY LECTURE

Room 308 Venable Hall

4:30 pm

"X-RAY AND γ-RAY REMOTE SENSING IN PLANETARY EXPLORATION

by

Dr. Jacob I. Trombka

Dr. JACOB I. TROMBKA received his B.S. and M.S. degrees from Wayne State University and his Ph.D. degree from the University of Michigan. He held positions with Oak Ridge National Laboratory and Jet Propulsion Laboratory before moving to the NASA-Goddard Space Flight Center. His work has involved the application of X-ray and Y-ray spectroscopy to space exploration. While at the Goddard Center, he has received the John Lindsay Award for his scientific achievement as well as awards for achievements associated with several space missions.

* * *

Remote sensing of X-rays and Gamma-rays from the Moon, Mars, and Venus to determine surface elemental composition has been successfully demonstrated during the United States Apollo and Viking missions and the Soviet Luna, Mars and Venus missions. These data have significantly influenced our understanding of the nature of the origin and history of the evolution of our Solar System. These techniques are now being considered by the United States, European, Soviet and Japanese space programs for use on future missions to the Moon, Mars, Mercury, Comets and Asteroids.

During the Apollo mission, detailed measurements of the diffuse gamma-ray background were carried out. These measurements indicate that this signal may be of cosmological origin. Furthermore, one of the most detailed measurements of a gamma-ray burst was made during the Apollo 16 mission. This astrophysical phenomenon is still not understood. Many measurements have been conducted by scientists throughout the world. Future space flight missions are now being planned to obtain both detailed spectral and temporal distribution from such bursts and to determine their spatial distribution.

Presentations:	12:45	See Program
Poster Session:	3:00	See Program
Refreshments:	2:00 & 4:20	Lower Lobby Venable Hall
Plenary Lecture:	4:30	Room 308 Venable Hall
Social Hour:	6:00	Kenan 9th Floor Lounge, UNC-CH
Dinner:	7:30	A formal banquet has not been planned. Anyone interested in accompanying the speaker to dinner, check with Dr. Gutknecht or Dr. Getzen during the afternoon or during the social hour.

ANALYTICAL CHEMISTRY

Room 222, Venable Hall
James W. Jorgenson, Presiding
University of North Carolina-Chapel Hill

1:00 Chelation Effects in Flame Atomic Spectrometry, Gary L. Long and Charles B. Boss, North Carolina State University.

1:20 Mass Spectrometry of Organometallic Compounds by New Ionization Methods, N. B. H. Henis and M. M. Bursey, University of North Carolina-Chapel Hill.

1:40 Quality Assurance Program for Herbicide Monitoring Laboratories, Alvia Gaskill, Jr. and R. K. M. Jayanty, Research Triangle Institute.

2:00 Some Chemical Effects of Surface Modifications on Cobalt Emitters Used in Field Ionization and Field Desorption Mass Spectrometry, Tim L. Youngless and M. M. Bursey, University of North Carolina-Chapel Hill.

2:20 Break

2:30 Statistical Techniques for Identifying Atoms Attached to Mono-Substituted Phenyl Rings Using IR and Raman Peak Heights, Rushung Tsao and W. L. Switzer, North Carolina State University.

2:50 Search File Compression by Eigenvector Projection, Greg Hangav, Richard Wieboldt, and Thomas L. Isenhour, University of North Carolina-Chapel Hill.

3:10 Electrochemical Analysis of Metallic Corrosion Rates, Van H. Baldwin, Research Triangle Institute.

3:30 Field Desorption Emitter Temperature Regulator and Calculated Emitter Temperatures, David F. Fraley, W. Stephen Woodward, Lee G. Pedersen, and Maurice M. Bursey, University of North Carolina-Chapel Hill.

3:50 The Generation of Uniform Droplets for Studies of Flame Spectrometric Processes, Robert J. Seymour and Charles B. Boss, North Carolina State University.

4:30 Plenary Lecture, Jacob I. Trombka.

ANALYTICAL CHEMISTRY-POSTER SESSION

Room 308, Venable Hall
3:00-4:20

Methodology for Assessing Exposure to Triazine Herbicides and Organophosphorus Pesticides, Diane E. Bradway, U. S. Environmental Protection Agency.

Determination and Storage Stability of Pentachlorophenol Residue in Milk, Douglas W. Bristol, U. S. Environmental Protection Agency.

Evaluation of Environmental Analysis Procedures, R. K. M. Jayanty, W. F. Gutknecht, Alvia Gaskill, Jr. and D. E. Lentzen, Research Triangle Institute.

Polyurethane Foam as a Collector for Air Monitoring: I Ambient Air, Merrill D. Jackson and Kathryn E. MacLeod, U. S. Environmental Protection Agency.

Polyurethane Foam as a Collector for Air Monitoring: II Indoor and Personal Air, Kathryn E. MacLeod and Merrill D. Jackson, U. S. Environmental Protection Agency.

Gas Chromatography of Underivatized, Chlorinated Phenols Using Support-Bonded Stationary Phases, Thomas R. Edgerton, U. S. Environmental Protection Agency.

Applications of an Electrochemical Detector for HPLC to Trace Analysis of Polar Toxic Chemicals, E. M. Lores, U. S. Environmental Protection Agency.

BIOCHEMISTRY/POLYMER CHEMISTRY

Room 223, Venable Hall
Janet M. Cardenas, Presiding
University of North Carolina-Chapel Hill

1:00 Eukaryotic Features of Euglena Chloroplast 17 S Ribosomal RNA, Mary C. Graves, Linda L. Spremulli, and Deborah A. Steege, University of North Carolina-Chapel Hill.

1:20 Lipid Alterations in Human Tumors, Donald T. Forman and Steven L. Forman, University of North Carolina and North Carolina Memorial Hospital.

1:40 Interpretation of Chemical and Biological Data from Environmental Assessment Studies, Nancy H. Sexton and Leslie I. Southerland, Research Triangle Institute.

2:00 Enzyme Immobilization and Studies in Subunit Interactions of Pyruvate Kinase, David H. Porter and Janet M. Cardenas, University of North Carolina-Chapel Hill.

2:20 Break

2:30 Purification of Cytoplasmic and Mitochondrial Elongation Factors Involved in Protein Synthesis in Euglena Gracilis, C. M. Beck and L. L. Spremulli, University of North Carolina-Chapel Hill.

2:50 New Route to Tri-o-Allyl Amylose, Richard D. Gilbert and Kiu S. Lee, North Carolina State University.

4:30 Plenary Lecture, Jacob I. Trombka.

PHYSICAL CHEMISTRY

Room 224, Venable Hall
Graham W. Hills, Presiding
University of North Carolina-Chapel Hill

1:00 Highly Excited States of the Oxygen Molecule, W. L. Luken and B. A. B. Seiders, Duke University.

1:20 The Effect of Electron-Electron Repulsion on the Stability of a One-Dimensional Conductor, Myung-Hwan Whangbo, North Carolina State University.

1:40 ESR Conformational Analysis of α-Acetoxy and α-Methoxycarbonyl Radicals, Kerry K. Karukstis and Peter Smith, Duke University.

2:00 Raman Study of Hydrogen Bonding and Phase Transition in Oxalic Acid Dihydrate, Stanley M. Angel and Y. Ebisuzaki, North Carolina State University.

2:20 Break

2:30 The Thermochemistry and Dissociation Dynamics of State Selected C_4H_4X Ions: I Thiophene, James J. Butler and Tomas Baer, University of North Carolina-Chapel Hill.

2:50 Reactivities of Carbonaceous Fuels in Carbon Dioxide via TGA, David P. Daugherty, Research Triangle Institute.

3:10 Europium Ion Complexation to γ-Carboxyglutamic Acid, Martha M. Sarasua, M. E. Scott, L. G. Pedersen, K. A. Koehler, and R. G. Hiskey, University of North Carolina-Chapel Hill.

4:30 Plenary Lecture, Jacob I. Trombka.

INORGANIC CHEMISTRY/CHEMICAL EDUCATION

Room 221, Venable Hall
Joseph L. Templeton, Presiding
University of North Carolina-Chapel Hill

1:00 Reactivity Patterns of Three New Monothiocarbamate Ligands, Donald Baird and Robert D. Bereman, North Carolina State University.

1:20 Kinetics and Mechanism of the Reduction of a Series of Aquocobaloxime Complexes by Iron(II), R. D. Morgan and A. L. Crumbliss, Duke University.

1:40 Properties of $[Ru(py)_4(NH_3)_2)]^{2+}$ Relevant to Ruthenium-Nitrogen Bonding Models, Larry E. Gates and Joseph L. Templeton, University of North Carolina-Chapel Hill.

2:00 Absorption and Emission Spectra for the Tris 2,2'-Dipyridylamine Complex of Ruthenium(II), M. K. DeArmond and Donald Segers, North Carolina State University.

2:20 Break

2:30 Approaching General Chemistry from the "Forward" Direction, James F. Bonk, Duke University.

2:50 Poisoning, A Dying Art: The Use of Alkaloid Poisons in Detective Fiction, Everett J. Nienhouse, University of North Carolina-Chapel Hill, FSC Big Rapids, MI.

3:10 A General Chemistry Lab Experiment Which Illustrates Applications of Chemical Principles to Living Systems, Marlon Walker, Duke University.

3:30 Some Non-Traditional Uses of Color Television in Undergraduate Chemical Education, Everett J. Nienhouse, University of North Carolina-Chapel Hill, FSC Big Rapids, MI.

4:30 Plenary Lecture, Jacob I. Trombka.

INORGANIC CHEMISTRY

Room 207, Venable Hall
Robert D. Bereman, Presiding
North Carolina State University

1:00 Laser Modulated Reflectance from Semiconductor GaAs(Se), R. W. Schwartz, W. M. Duncan and A. F. Schreiner, North Carolina State University.

1:20 A Molecular Orbital Theory for Monomeric Metal-Alkyne Complexes, Paul B. Winston and Joseph L. Templeton, University of North Carolina-Chapel Hill.

1:40 Laser Excited Photoluminescence of Semiconductor GaAs Having Intentionally Doped Se Present, R. W. Schwartz, W. M. Duncan and A. F. Schreiner, North Carolina State University.

2:00 The Hypersensitive $^4G_{5/2} \rightarrow {}^4I_{9/2}$ Transition Probability of Tris(1,3-diphenyl-1,3-propanedionato) aquoneodymium(III), Andrew Fuller Kirby and Richard A. Palmer, Duke University.

2:20 On the Origin of the Low Hyperfine Splitting Values of Type I Copper(II) Site, Jay Dorfman and Robert D. Bereman, North Carolina State University.

(cont. 6p)

3:00 Circular Dichroism Studies of Ion Pairing in Optically Active Crown Ether Complexes, Gerald D. Malpass, Richard A. Palmer and Robert G. Ghirardelli, Duke University.

3:20 $Mo(CO)_2(S_2CNR_2)_2$: A Monomeric, Coordinatively Unsaturated Trigonal Prismatic Molybdenum Carbonyl Complex, Bennett C. Ward and Joseph L. Templeton, University of North Carolina-Chapel Hill.

3:40 Coordination Chemistry of Small Ring Heterocyclic Compounds, Peter Schaber and Robert D. Bereman, North Carolina State University.

4:00 Reactions of Acetylenes with Early Transition Metal Confacial Bioctahedra, Richard S. Herrick and Joseph L. Templeton, University of North Carolina-Chapel Hill.

4:30 Plenary Lecture, Jacob I. Trombka.

ORGANIC CHEMISTRY

Room 307, Venable Hall
Thomas N. Sorrell, Presiding
University of North Carolina-Chapel Hill

12:45 Interaction of Porphyrin and Metalloporphyrin Excited States with Molecular Oxygen. Energy-Transfer Versus Electron-Transfer Quenching Mechanisms in Photo Oxidations, G. Sidney Cox, David G. Whitten, and Charles Giannotti, University of North Carolina-Chapel Hill,

1:05 Synthesis of Photodegradation Products of Kepone, Robert D. Zehr and Nancy K. Wilson, U. S. Environmental Protection Agency.

1:25 Structure Determination of the Active Sulfhydryl Reagent in the Gill Tissue of the Mushroom, Agaricus Bisporus, P. D. Mize, P. W. Jeffs, K. Boeckelheide, and C. W. Anderson, Duke University.

1:45 Synthesis of New Isoindolequinones as Models for a Synthesis of Mitosene Analogs, Mir F. Ahmad, John A. Myers and Willa A. Rainbow, North Carolina Central University.

2:05 A New Synthetic Route to Large Bicyclic Bridgehead Olefins via the Oxy-Cope Rearrangement, S. G. Levine and R. L. McDaniel, Jr., North Carolina State University.

2:25 Synthesis and Stereochemistry of Some 7-Phospha(III)norbornene Derivatives, Keith A. Mesch and Louis D. Quin, Duke University.

2:45 Transition Metal Tetrahyroborate Complexes as Selective Reducing Agents in Organic Chemistry, P. S. Pearlman and T. N. Sorrell, University of North Carolina-Chapel Hill.

3:05 Acid Catalyzed Rearrangement of 2,3-Diaryl-exo-cis-2,3-bornanediols, Matthew C. Leinung and Pelham Wilder, Jr., Duke University.

3:25 The Photochemistry of 7-Iodonorbornanes: The 7-Norbornyl Cation, Gregory L. McCraw, Robert J. Davidson and Paul J. Kropp, University of North Carolina-Chapel Hill.

3:45 Synthesis of Radiolabeled Biosynthetic Precursors to Corydalis Alkaloids, Richard Redfearn and Peter W. Jeffs, Duke University.

4:05 Mechanistic Studies Concerning Oxyphosphoranes: Application to Syntheses Involving Amino Acids, S. W. Bass and S. A. Evans, Jr., University of North Carolina-Chapel Hill.

4:30 Plenary Lecture, Jacob I. Trombka.

How to Obtain Abundant Clean Energy

by **Linda Baine McGown** and **John O'M. Bockris**

Explaining why industrialized society's dependence on non-renewable energy sources can only lead to disaster, the authors of this crucial volume discuss in a clear and objective fashion what energy actually is, where we get it now, why present sources won't work for the future, and what alternatives are available. approx. 225 pp., illus., 1980, $14.95

Hydrocarbons and Halogenated Hydrocarbons in the Aquatic Environment

edited by **B. K. Afghan** and **D. Mackay**

associate editors: **H. E. Braun, A. S. Y. Chau, J. Lawrence, D. R. S. Lean, O. Meresz, J. R. W. Miles, R. C. Pierce, G. A. V. Rees, R. E. White, D. N. Whittle,** and **D. T. Williams**

This volume discusses the characterization, identification, and analysis of hydrocarbons and halogenated hydrocarbons in the aquatic environment. Advanced techniques for monitoring the distribution, incidence, biological effects, and environmental pathways of these pollutants are evaluated. Environmental Science Research, Volume 16. 602 pp., 1980, $59.50

Application of Short-Term Bioassays in the Fractionation and Analysis of Complex Environmental Mixtures

edited by **Michael D. Waters, Stephen Nesnow, Joellen L. Huisingh, Shahbeg S. Sandhu,** and **Larry Claxton**

Reflecting advances in the field, this volume provides an excellent overview of the major short-term bioassay systems in current use and a review of methodologies for the collection of chemical analysis of environmental samples. Environmental Science Research, Volume 15. 602 pp., 1979, $49.50

Fundamental Research in Homogeneous Catalysis

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edited by **Minoru Tsutsui**

This volume encompasses mechanistic and theoretical considerations, biological applications, and commercial applications of homogeneous catalysis. Topics covered include selectivity in polymer formation, metalocyclic metal complexes, and such new concepts as "chronoselectivity" in propagation reactions. 1072 pp., 1979, $75.00

An Introduction to Microscopy by Means of Light, Electrons, X-Rays, or Ultrasound

by **Theodore George Rochow** and **Eugene George Rochow**

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—**Frederick Skvara, M.D.,** Newsletter of the New York Microscopical Society

384 pp., illus., 1978, $29.50

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