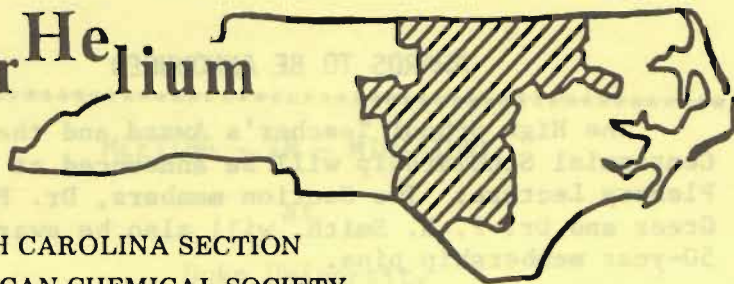


Tar Helium



NORTH CAROLINA SECTION
AMERICAN CHEMICAL SOCIETY

Vol. 8, No. 8

Raleigh, N. C.

April 1978

MEETING-IN-MINIATURE

at

Duke University

A P R I L 18, 1978

PLENARY LECTURE

by

DR. ALAN G. MacDIARMID

Department of Chemistry

University of Pennsylvania

AWARDS TO BE ANNOUNCED

The High School Teacher's Award and the Centennial Scholarship will be announced at the Plenary Lecture. Two Section members, Dr. Paul S. Greer and Dr. F. H. Smith, will also be awarded 50-year membership pins.

HPLC SHORT COURSE ANNOUNCED

Enclosed is a registration form for a laboratory/lecture short course on high performance liquid chromatography. This short course will be held on a Friday afternoon and Saturday morning, May 12 and 13, 1978. Participation will be limited to about 30 registrants. Registration is \$40 for ACS members and \$50 for non-members. Non-members can receive the member's discount by joining the Society. Membership information is available from the membership committee listed elsewhere in this issue.

SOINE HARTUNG MEMORIAL LECTURE

Dr. Taito O. Soine, Professor of Medicinal Chemistry, University of Minnesota, will present the 10th Annual Walter H. Hartung Memorial Lecture at the U.N.C. School of Pharmacy April 12. The Lecture will be held in Room 111, Beard Hall, at 7:30 p.m. Dr. Soine will present, "Nonclassical Blockades in Curare Research."

The Hartung Lectures are sponsored by the Medicinal Chemistry Division of the U.N.C. School of Pharmacy with support from the North Carolina Pharmaceutical Research Foundation. These Lectures are a memorial to Dr. Walter H. Hartung who served on the faculty of the U.N.C. School of Pharmacy from 1948 to 1956. He passed away in 1961.

MEETING - IN - MINIATURE

at

Duke University

April 18, 1978



Sponsored by

The North Carolina Section

of

The American Chemical Society

PLENARY LECTURE

Auditorium

Paul M. Gross Laboratory

4:30 p.m.

"METALLIC COVALENT POLYMERS: $(SN)_x$ AND $(CH)_x$
AND THEIR DERIVATIVES"

by

Dr. Alan G. MacDiarmid

Polymeric sulfur nitride, polythiazyl, $(SN)_x$, was the first example of a metallic covalent polymer which contains no metal atoms. Either $(SN)_x$ or S_4N_4 may also be halogenated to give a series of highly conducting polymers. For example, the polythiazyl bromides $(SNBr_y)_x$ ($y = \sim 0.2 - 0.5$) have conductivities approximately ten times greater than that of $(SN)_x$ at room temperature. This conductivity is comparable to that of lead if measured on a volume basis or to that of gold if measured on a weight basis.

When crystalline, silvery films of the flexible, semiconducting polymer, "polyacetylene", $(CH)_x$, in either the cis or trans forms are exposed to chlorine, bromine, iodine, AsF_5 , etc. vapor, they become "doped" with the species and their optical and electrical properties change markedly. They are converted to "p"-type semiconductors and their conductivity increases as doping proceeds. At a few mole percent dopant concentration, they undergo a semiconductor-metal transition and are converted to silvery-golden flexible films of "organic metals" having conductivity on a mass basis comparable to that of a metal such as mercury. "n"-type semiconductors, which also undergo a semiconductor metal transition, may be formed by doping with Li, Na, K, etc.

DR. ALAN G. MACDIARMID received his undergraduate training at the University of New Zealand. After completing his M.Sc. there, he received a Fulbright Scholarship to the University of Wisconsin, where he was awarded the Ph.D. degree. He then studied at Cambridge on a Shell Company postgraduate fellowship.

Dr. MacDiarmid now holds the position of Professor of Chemistry at the University of Pennsylvania. He was the 1967 recipient of the Philadelphia ACS Section Award and the 1971 recipient of the Frederic Stanley Kipping Award in Organosilicon Chemistry. He has held guest professorships at the University of Karlsruhe, Germany and at Kyoto University, Japan. He has coauthored approximately 120 papers and edited several journals and monographs in inorganic chemistry. Dr. MacDiarmid has also served as chairman of the Inorganic Division of the ACS.

Presentations:	1:00	See Program
Refreshments:	3:30	Lobby Paul M. Gross Laboratory
Plenary Lecture:	4:30	Auditorium Paul M. Gross Laboratory
Social Hour:	6:00	Old Trinity Room Duke Student Union
Dinner:	*7:00	Old Trinity Room Duke Student Union (\$6.50-Regular members; \$3.25- student and student affiliates)

* Please make reservations by Friday, April 14, 1978.
Call: Sue Hester at 966-1566 in Chapel Hill, Terry
Laing at 684-2414 in Durham or Linda Hill at
737-2548 in Raleigh.

ANALYTICAL CHEMISTRY
110 Paul M. Gross Laboratory
C. H. Lochmüller, Presiding

- 1:00 Catalysis and Gas Chromatography Applied to Trace Metal Speciation. M. Ditzler and W. F. Gutknecht, Duke University.
- 1:20 Calculation and Use of $y(\text{metal wt.}) = A * \text{Exp}(b * x[\text{response}]) - K$ for Graphite Furnace Atomic Absorption. David F. Natschke, Research Triangle Institute.
- 1:40 Stepping Motor Control of a Monochromator. Ted Glod, North Carolina State University.
- 2:00 A Systematic Approach to Thermal Conductivity Detector Design. Flow Rate Dependence of Non-Column Contributions to Band Volume. C. H. Lochmüller and Bert M. Gordon, Duke University.
- 2:20 Ion Exchange Properties of Crown Ether Precipitates with Phosphomolybdic Acid. L. A. Fernando and L. H. Bowen, North Carolina State University.

POLYMER AND BIOCHEMISTRY
110 Paul M. Gross Laboratory
C. Pitt, Presiding

- 2:40 A Study of Morphological Changes in Polyamide Fibers. M. L. Hobbs and D. M. Cates, North Carolina State University.
- 3:00 Comparative Analysis of Radiation-Induced Damage in Semi-Crystalline Isotactic Poly(methyl methacrylate). Alan R. Greenberg and Robert P. Kusy, Dental Research Center and Dental School at the University of North Carolina.
- 3:20 Precipitation Kinetics of Cellulose from Diluted Cadoxen Solutions. E. T. Caviness and M. H. Theil, North Carolina State University.
- 3:40 A Two-Dimensional Electrophoretic System for Analysis of Histones from Chromatin Subunits. Randall G. Richards, Duke University.
- 4:30 Plenary Lecture, Alan G. MacDiarmid

INORGANIC CHEMISTRY
105 Paul M. Gross Laboratory
R. Neilson, Presiding

- 1:00 Some Redox Properties of the Novel Complex ion, oxo-bis (2,2'-bipyridine) pyridineruthenium (IV). Bruce A. Moya and Thomas J. Meyer, University of North Carolina at Chapel Hill.
- 1:20 Outer Sphere Inner Valence Transfer. Jeff C. Curtis and Thomas J. Meyer, University of North Carolina at Chapel Hill.
- 1:40 New Routes to Oxobridged Ruthenium Polymeric Species. John Baumann and Thomas J. Meyer, University of North Carolina at Chapel Hill.
- 2:00 ^1H - NMR of bis-bisesquis- and tris-(2,2'-bipyridine) and (1,10-phenanthroline) Complexes of Iridium (III). J. L. Kahl, K. W. Hanck and K. DeArmond, North Carolina State University.
- 2:20 Electrochemistry of Iridium-Bipyridine Complexes. J. L. Kahl, K. W. Hanck and K. DeArmond, North Carolina State University.
- 2:40 NMR Studies of the Conformations and Complexation Kinetics of Crown Ethers. James C. Robinson, Gerald Malpass and Richard A. Palmer, Duke University and Robert Ghirardelli, ARO.
- 3:00 Photoacoustic Linear Dichroism Spectroscopy in Inorganic Chemistry. Joseph C. Roark and Richard A. Palmer, Duke University.
- 3:20 Synthesis of Biologically Active α -Boro Amino Acids and Their Precursors. Patty Wisian-Neilson and Bernard Spielvogel, Duke University.
- 4:30 Plenary Lecture, Alan G. MacDiarmid

ORGANIC CHEMISTRY
104 Paul M. Gross Laboratory
S. W. Baldwin, Presiding

- 1:00 Preparation and Use of Optically Active Epoxides in Synthetic Chemistry. Thomas Cullen and James Coke, University of North Carolina at Chapel Hill.
- 1:20 Photoannulations with Formyl Ketone Equivalents, S. W. Baldwin and James M. Wilkinson, Duke University.
- 1:40 Benzyl and Allyl Diazoacetate in One Carbon Ring Expansions of Ketones. Nelson G. Landmesser and S. W. Baldwin, Duke University.
- 2:00 Spirocyclic Hydroxamic Esters: Model Studies Directed Toward the Synthesis of Gelsemicine. S. W. Baldwin and Joan K. Glascock, Duke University.
- 2:20 Lactone Syntheses via Photochemical Annulations. Michael T. Crimmins and S. W. Baldwin, Duke University.
- 2:40 Conformational Analysis of 2-Phenyl- and 2-Phenyl-2-Methyl-1,3-dithianes. Ernest L. Eliel and William H. Stevenson, University of North Carolina at Chapel Hill.
- 3:00 Neighboring Group Participation of Sulfur Involving a Four-membered Ring. Ernest L. Eliel and William H. Pearson, University of North Carolina at Chapel Hill.
- 3:20 Rearrangements and Elimination Reactions of Quaternary Ammonium Salts Containing the Benzyl Group. Hon-Bin Hsu, F. Afghahi, S. T. Purrington and C. L. Bumgardner, North Carolina State University.
- 3:40 A New Synthesis of Nine-membered Rings Containing Phosphorus or Sulfur. E. D. Middlemans, J. D. Leimert and L. D. Quin, Duke University.
- 4:00 The Steric Course of Epoxidation of 2-Phospholene Oxides. H. Franklin Lawson and Louis D. Quin, Duke University.
- 4:30 Plenary Lecture, Alan G. MacDiarmid.

PHYSICAL CHEMISTRY

111 Paul M. Gross Laboratory

P. Smith, Presiding

- 1:00 Emission Photoselection Studies of Transition Metal Complexes. C. Carlin,
W. L. Huang and M. K. DeArmond, North Carolina State University.
- 1:20 ESR Study of Radicals Derived from Cyclopentanone. Carolyn I. Weachers
and Peter Smith, Duke University.
- 1:40 INDO Molecular Orbital Study of Alkyl Formate - Derived Radicals:
Dependence of the Formyl - Proton ESR Splitting on Radical Conformation.
Kerry K. Karukstis and Peter Smith, Duke University.
- 2:00 Fractional Independent Yields of ^{139}Ba and ^{142}La in Thermal Neutron
Induced Fission of ^{249}Cf . M. A. Monzyk and Dave Troutner, NSI and
University of Missouri.
- 2:20 Raman Study of Two Dimensional Water in $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ and in $\text{Cu}(\text{HCOO})_2 \cdot 4\text{H}_2\text{O}$.
Susan A. Sherrow. North Carolina State University.
- 2:40 A Model for Exciton Motional Correlation Effects in Dense Triplet Exciton
Systems. S. R. Bondeson and D. B. Chesnut, Duke University.
- 3:00 Kinetic Test of Two Denatured State Mechanism of Protein Folding.
William R. Herzog and Robert W. Henkens, Duke University.
- 3:20 Radiolysis of 1,1,2-trifluoroethane. H. H. Carmichael and D. E. Morris,
North Carolina State University.
- 3:40 Liquid Activity Coefficients from Pressure-Liquid Composition Measurements
for Binary Systems. Forrest W. Gerzen, North Carolina State University.
- 4:30 Plenary Lecture, Alan G. MacDiarmid

POSTER SESSION
Lobby of Paul M. Gross Laboratory
Presentations 3:00-4:30

Studies of Membrane Ion-Transport Facilitation by Crown Ethers. Thomas Effinger and Richard A. Palmer, Duke University.

Binding of an Electron to a Molecular Dipole: Geometry of BeF_2^- . Barbara A. B. Seiders and W. L. Luken, Duke University.

Fluorescence Studies on the Denaturation of Carbonic Anhydrase. Amelia M. Schrag and Robert W. Henkens, Duke University.

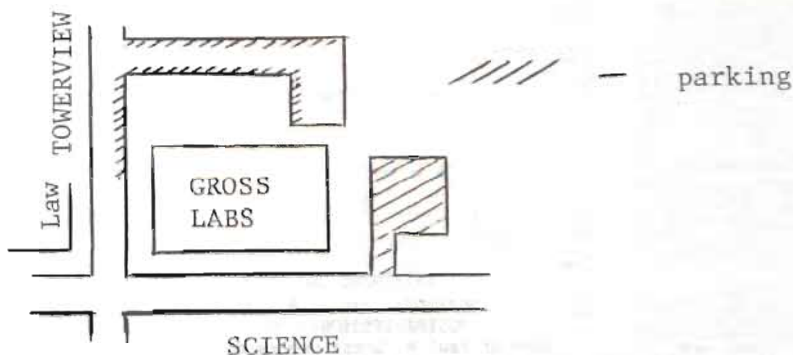
Response Studies of Mercury-based solid-state Ion Selective Electrodes in Basic Solutions. Michael B. Sumner and W. F. Gucknecht, Duke University.

A Systematic Approach to Chromatographic Detector Design. Bert M. Gordon and C. H. Lochmüller, Duke University.

Absorption Spectra and Circular Dichroism of $[\text{Mn}(\text{Me}_6\text{tren})\text{Br}]\text{Br}$ in Single Crystals. Judith Kaufman and Richard A. Palmer, Duke University.

Synthesis of Biologically Active Difunctional α -Boro Amino Acids and Their Precursors. Fred Harchelroad, Jr., Patty Wisian-Neilson and Bernard Spielvogel, Duke University.

Synthesis of Isoindolequinones via a 1,3-dipolar Addition Reaction. Willie Whitter, Lloyd Moore, Rosalyn Waldo and John A. Myers, North Carolina Central University.



AREA SEMINARS

- NCSU, 4:10 p.m., Room 124 Dabney Hall
- | | |
|---------|---|
| Apr 12 | Dr. Edo Pellizzari, Research Triangle Institute
"Effluents in Coal Gassification" |
| 17 | Dr. Peter Sykes, Cambridge University
"Reactions of Nucleophiles with Azolium" |
| May 10* | Dr. H. H. Schmidtke, Universität Düsseldorf
"Sharp-line Absorption and Emission Spectra of Coordination Compounds" |
- UNC-CH, 11:00 a.m., Room 308 Venable Hall
- | | |
|--------|--|
| Apr 12 | Dr. Charles P. Casey, University of Wisconsin
"Model Studies of the Olefin Metathesis Reaction" |
| 19 | Dr. Robert B. Gagosian, Woods Hole Oceanographic Institution
"Transport and Transformation of Biogenic Compounds in the Oceans" |

* This seminar is scheduled for Wednesday instead of Monday. Dr. Schmidtke will continue with related talks on May 11, 16 and 18. Those interested should contact Dr. Keith DeArmond, NCSU, 737-2943.

ACS MEMBERSHIP COMMITTEE EXPANDED

In order to get information about the ACS to prospective members in the area, the Membership Committee has been expanded to include representatives in the Research Triangle Park as well as area colleges and universities. If you know of someone who might be interested in joining, please let one of the committee members listed below know.

Larry Bowen, Chairman	NCSU	(737-2995)
Slayton Evans, Thomas Henderson,	UNC Burroughs Wellcome	(933-6319) (549-8371 x 209)
Robert Izydore, Charles Lochmüller, Richard Neeley, Van Wheeler,	NCCU Duke Meredith EPA	(683-6351) (684-2414) (833-6461) (541-2442)

THANKS

The Editor wishes to thank Ms. Joyce Weatherspoon for her assistance in typing the TarHelium. He would also like to thank Dr. Suzzane Purrington for her assistance in proofreading the TarHelium.

A PRACTICAL COURSE IN HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY

DATES: Friday and Saturday, May 12 and 13, 1978
 TIMES: 1:00 pm to 6:00 pm Friday PLACE: Duke University
 9:00 am to 2:00 pm Saturday Paul M. Gross Laboratory
 REGISTRATION TEXT: None, Handouts will be
 DEADLINE: May 5, 1978 provided.

COURSE

DESCRIPTION: An intensive short course in HPLC practice for the non-expert. The lecture material will include topics such as: choice of columns, gradient vs isocratic elution, C₂, C₈, C₁₈ reverse phase packings, how to pack columns, temperature effects, an empirical approach to predicting retention order and resolution in reverse phase. The laboratory phase will include demonstrations by the major instrument manufacturers and some discussion of low cost HPLC instrumentation for undergraduate laboratory courses. Participants are encouraged to bring samples to try on reverse phase systems during the lab phase. Provision will be made for small group discussion on Saturday during the laboratory phase. Registration will be limited to approximately 30.

INSTRUCTOR: C. H. Lochmüller is an Associate Professor of Chemistry at Duke University. He came to Duke after two years postdoctoral at Purdue University with L. B. Rogers. His graduate degrees come from Fordham University. Although his interests have ranged to include such diverse areas as proton-induced x-ray emission analysis, mass spectrometry and nuclear magnetic resonance, his main efforts lie in the area of separation science especially in the molecular basis for selectivity in chromatography. He presently directs the doctoral research of eight graduate students working in this area. He is an advisor to the USEPA on Environmental Assessment Programs and a member of an EPA panel on Organic Analysis. He consults with industry in the area of detector design and trace gas analysis. Currently he is serving on the organizing committee for the Midland Macromolecular Institute Symposium on "Silylated Surfaces" (May 1978), an Engineering Foundation Symposium on the "Scientific Basis for Government Regulation" and is local arrangements chairman for the 1980 Analytical Division Symposium. He is the author of two chapters in instrumental analysis texts on gas chromatography, and has taught numerous courses on separation methods including invited lectures on "Optical Isomer Separations" at the 1977 J. and J. Symposium "Recent Advances in Separations Science." He served as an expert panel member at the 1977 ASTM E-19 meeting on the subject of environmental sampling.

Enclosed is a check payable to the North Carolina Section of the American Chemical Society as registration fee for A PRACTICAL COURSE IN HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY. A check must accompany the registration. Billing cannot be arranged. Non-members may contact the treasurer about joining the Society and receiving the member's discount. If continuing education credit (through Meredith College) is desired check the blank and enclose \$2 extra.

_____ \$ 40 - ACS Member; _____ \$ 50 - non ACS Member

_____ \$ 2 fee for continuing education credits

NAME: _____ HIGHEST DEGREE: _____

BUSINESS ADDRESS: _____

PHONE: _____

SEND TO: Dr. Forrest W. Getzen, Treasurer, North Carolina Section ACS
 % Department of Chemistry, North Carolina State University
 Raleigh, North Carolina 27650

EXECUTIVE COMMITTEE

Richard Palmer (*Duke*), Chairman
Eric Wiechart (*Cutter*), Chairman-Elect
Kathryn MacLeod (*EPA*), Secretary
Forrest Getzen (*NCSU*), Treasurer
William L. Switzer (*NCSU*), Editor
Marcus Hobbs (*Duke*), Councillor
Maurice Bursey (*UNC*), Councillor
Ernest Eliel (*UNC*), Councillor
Robert Ghirardelli (*ARO*), Alternate Councillor
Sally M. Horner (*Meredith*), Alternate Councillor
Halbert Carmichael (*NCSU*), Alternate Councillor
Suzanne Purrington (*NCSU*), Past Chairman
Monica Nees (*NSCTRC*), Past Chair
Maurice Bursey (*UNC*), Past Chairman

TARHELIUM IS PUBLISHED BY THE NORTH CAROLINA SECTION OF THE AMERICAN CHEMICAL SOCIETY. THE VIEWS EXPRESSED HEREIN ARE NOT NECESSARILY THOSE OF THE SECTION. DIRECT ALL CORRESPONDENCE TO DR. WILLIAM L. SWITZER, EDITOR, C/O CHEMISTRY DEPARTMENT, NORTH CAROLINA STATE UNIVERSITY, RALEIGH, N. C. 27607.

NON-PROFIT
ORGANIZATION
U.S. POSTAGE
RALEIGH, N. C.

PERMIT NO. 491