

Tar^{He}lium



North Carolina Section

AMERICAN CHEMICAL SOCIETY

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May 1974

MEETING-IN-MINIATURE

Date: Wednesday, May 15, 1974

Place: University of North Carolina
Chapel Hill, North Carolina

Times: 1:00 Papers begin. See Program Inside.
4:00 Refreshments. Lower Lobby, Venable
4:30 Plenary Session, 207 Venable

"MONOMERS THAT EXPAND ON POLYMERIZATION"

Speaker: William J. Bailey
University of Maryland
College Park, Maryland
and
President-Elect, American Chemical Society

5:45 Happy Hour, Carolina Inn

6:30 Banquet, Carolina Inn
(Cornish Hen, \$4.25)

8:00 After-Dinner Talk
William J. Bailey

"REBIRTH OF THE CHEMIST?"

It's a real pleasure for your Editor to welcome one of her former professors as plenary speaker for the Meeting-in-Miniature. Dr. William J. Bailey received his B. Chem. from Minnesota in 1943 and Ph.D. in organic chemistry from Illinois in 1946. After serving at MIT and Wayne University, he joined the University of Maryland, College Park, in 1951 and has been there ever since.

He has published more than 130 papers on the pyrolysis of esters, cyclic dienes, polynuclear aromatic hydrocarbons, phosphorus compounds, polypeptides, ladder and spiro polymers, monomers that expand on polymerization, and the mechanism of thermal degradation of vinyl polymers. This work has brought numerous awards and membership on the editorial boards of 11 journals.

Dr. Bailey's extensive service to the American Chemical Society on both the national and local levels culminated this year in his election as President-Elect of the ACS.

"MONOMERS THAT EXPAND ON POLYMERIZATION"

For a number of industrial applications, such as precision castings, strain-free composites and binders for solid propellants, it is highly desirable to have monomers which expand on polymerization. In the formation of composites, such a monomer might either minimize poor adhesion between the matrix and the reinforcing agent or eliminate micro-cracks.

Because of shortening in bond distances, both addition and ring-opening polymerization lead to shrinkage. Therefore there is reason to believe that if monomers were utilized in which two bonds were broken for every new bond formed in the polymerization process, near zero shrinkage or even expansion would be possible. The boron trifluoride-catalyzed polymerization of spiro ortho esters and the base-catalyzed polymerization of bicyclic lactones do indeed give some expansion. The reaction mechanisms will be discussed in detail.

Session 2

Room 12-2 Venable

PHYSICAL AND ANALYTICAL CHEMISTRY

Richard P. Buck, Presiding

- 1:00 The Use of Contact Shift NMR Spectra in Conformational Analysis. Joseph E. Sarneski and Charles N. Reilley, UNC-CH
- 1:20 Derivatization of GLC Effluents Prior to Mass Spectral Analysis. Carolyn K. Hart, J. Ronald Hass, and Marion L. Miles, NCSU
- 1:40 Electrochemistry of Rhodium Diimine Complexes. Gregory A. Kew, Kenneth W. Hanch, and Keith DeArmond, NCSU
- 2:00 Intermission
- 2:20 The Impedance Characteristics of Ion-Selective Glass Electrodes. James R. Sandifer and Richard P. Buck, UNC-CH
- 2:40 A Computer-Controlled Rapid-Scanning Stop-Flow Spectrometer. Part I. R. Mark Wightman, Richard L. Scott, Charles N. Reilley, Royce W. Murray, and J. Nicholas Burnett, UNC-CH
- 3:00 A Computer-Controlled Rapid-Scanning Stop-Flow Spectrometer. Part II. R. Mark Wightman, Richard L. Scott, Charles N. Reilley, Royce W. Murray, and J. Nicholas Burnett, UNC-CH
- 3:20 Multiple Matrix Elements of the Translation Operator. Dick E. Hoskins, UNC-CH
- 3:40 Convolution and Deconvolution in Cyclic Voltammetry. Henry L. Suprenant and Charles N. Reilly, UNC-CH

Session 1

Room 12-1 Venable

INORGANIC CHEMISTRY

P. E. Rakita, Presiding

- 1:00 Oxidatively Induced Solvolysis of Ruthenium Azides
Gilbert M. Brown, Robert J. Callahan, and Thomas J. Meyer, UNC-CH
- 1:20 Electron Transfer Quenching of Excited States.
Randy Bock, T. J. Meyer, and D. G. Whitten, UNC-CH
- 1:40 On the Mechanism of Exchange in the Pyrazine
Copper(II) Nitrate System. H. Wayne Richardson
and William E. Hatfield, UNC-CH
- 2:00 Electron Spin Resonance Spectra of Tris(ethyl-
xanthato)chromium(III). William Klotz and Keith
DeArmond, NCSU
- 2:20 Structure and Magnetism of Hydroxo-Bridged Chromium
(III) Dimers. Raymond P. Scaringe, William E.
Hatfield, and Derek J. Hodgson, UNC-CH
- 2:40 Structural Characterization of Di- μ -hydroxo-bis
(N,N,N',N'-tetraethylethylenediamine)dicopper(II)
Perchlorate, $[\text{Cu}(\text{teen})\text{OH}]_2(\text{ClO}_4)_2$. Eva Dixon Estes,
William E. Hatfield, and Derek J. Hodgson, UNC-CH
- 3:00 The Preparation and Characterization of Some Ligand-
Bridged Ruthenium Complexes. E. C. Johnson, T. J.
Meyer, and S. A. Adeyemi, UNC-CH
- 3:20 Molecular Orbital Studies of the Ground State and
Intermediate in the Intramolecular Rearrangements
of Indene and Silylindene. Mary N. Andrews and
P. E. Rakita, UNC-CH
- 3:40 Kinetics of the Oxidation of Cuprous Phenanthroline
by Molecular Oxygen. L. J. Gestaut and A. L.
Crumbliss, Duke

Session 3

Room 221 Venable

ORGANIC CHEMISTRY

Slayton A. Evans, Presiding

- 1:00 Structures of 8-Azaguanine Hydrochloride and 8-8-Azaguanine Hydrobromide. Douglas Kozlowski, Phirtu Singh, and Derek J. Hodgson, UNC-CH
- 1:20 Crystal Structure of Para-bromophenyldiphenylcarbinyl difluoramine. Jefferson Surles, Jon Bordner, and Carl L. Bumgardner, NCSU
- 1:40 Photochemistry of Alkyl Iodides. Formation of an Anti-Bredt Olefin. Tappey H. Jones, Graham S. Poindexter, and Paul J. Kropp, UNC-CH
- 2:00 Intermission
- 2:20 The Reactions of Oxazolium-5-Oxides with Quinones. John A. Myers, Rayvon Sneed, and Samuel Council, NCCU
- 2:40 Huckel Molecular Orbital Studies of Phosphonium Salts. Reuben D. Rieke and C. Kenneth White, UNC-CH
- 3:00 Photodifluoramination of Imines. John C. Wozny and Carl L. Bumgardner, NCSU
- 3:20 Addition of Atomic F to Propylene. Jim G. Carver and Carl L. Bumgardner, NCSU

* * * * *

This is the last issue of TARHELIUM for the academic year. Have a great summer, and see y'all in the fall!

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