Dr. Norman Wright

WILLIAMS-WRIGHT AWARD

This newly established award for industrial vibrational spectroscopy will be presented to Dr. Norman Wright, one of the scientists for whom the award was named, at the 1978 meeting of the Federation of Analytical Chemistry and Spectroscopic Societies (FACSS). Although retired, Dr. Wright still maintains a strong interest in science and is working on a problem in physics on a private basis. The award will be accepted for Dr. Wright by R. O. Kage of Dow Chemical Company.

Dr. Wright is well known for his innovative and enthusiastic uses of infrared spectroscopy at the Dow Chemical Co., Midland, MI. After joining the company on July 1, 1937, he built an infrared spectrometer and developed a number of research and production uses. These uses were described in a classic paper published in 1941 (Ind. Eng. Chem., Anal. Ed., 12, 1). This work provided an impetus to the development of chemical infrared spectroscopy that has never abated. Dr. Wright's early conviction that infrared was a promising method for the analysis of mixtures, particularly organic materials, has been proven countless times in thousands of laboratories. In following years, the Dow Spectroscopy Lab (later the Chemical Physics Research Laboratory) under Dr. Wright as Director, became famous for its leadership in applying infrared spectroscopy to industrial problems.

Dr. Wright was born on October 26, 1906 in North Baltimore, Ohio. He received an A.B. degree in Physics, Chemistry, and Mathematics from Phillips University, Enid, Oklahoma, in 1927, and an M.S. from the University of Oklahoma in 1929 under Prof. J. Rud Nielsen. His subsequent study at the University of Michigan under Profs. H. M. Randall and D. M. Dennison led to a Ph.D. degree in Physics in 1933. His association with Dow spanned the period 1937 to 1969, when he retired. He is a Fellow of the American Physical Society; a Fellow of the Optical Society of America; an honorary member of the Society for Applied Spectroscopy and the Coblenz Society; and also holds membership in the American Chemical Society, AAAS, Sigma Xi; and Gamma Alpha. He received the Medal of the Society for Applied Spectroscopy in 1955 and the Pittsburgh Spectroscopy Award in 1958. He was a charter and founding member of the Coblenz Society and served as its first president.

Dr. Van Zandt Williams, for whom this award was named along with Norman Wright, died on May 13, 1966 at the age of 50, but his influence is still felt throughout the community of industrial spectroscopists. Dr. Williams received a Ph.D. in Physics from Princeton University in 1941, and joined American Cyanamid Corporation where he helped develop an infrared spectroscopy laboratory and co-authored the first practical book on infrared spectroscopy. In 1948 he joined Perkin-Elmer as Director of Instrument Development and Sales, and brought the famous Model 21 to the marketplace. He was dedicated to excellence and constantly promoted the use of instrumental techniques. He was a strong proponent of science education in our schools, and maintained a broad interest in the scientific world. He held the title of Executive Vice-President when he left Perkin-Elmer in 1965 to become Director of the American Institute of Physics. He was a founder of the Coblenz Society and its first Registrar.

IUPAC RECOMMENDATIONS FOR IR SPECTRA

Enclosed with this mailing is a copy of the IUPAC recommendations for presentation of infrared absorption spectra. They are based on the Coblenz Society's criteria for evaluation of spectra. Unfortunately, the title page is in error; the document was prepared by R. Norman Jones (E.D. Becker is Chairman of the Commission on Molecular Structure and Spectroscopy). These recommendations provide a good guide for preparing infrared reference spectra, and their use is encouraged.
Infrared Texts:


This is an ideal guide which is particularly suitable for students. Subjects covered include the following: instrumental calibration techniques, physical properties and cleaning of cell windows, use of sealed and demountable cells for liquid phase spectra, checking for a "dead" pen response when using a solvent reference, preparation of mineral oil or perfluorohydrocarbon mulls, preparation of KBr disks, casting of solid films on salt windows, quantitative analysis techniques. No comments are made, however, on gas cell handling.


This reference text, suitable for the active researcher, represents a comprehensive guide to the state of the art as of 1965. The text includes details of the various cells utilized in studying high and low temperature spectra of solid, liquid and gas-phase samples, use of variable path length liquid cells, and the examination of insoluble polymers and rubbers.


Chapter 3, "Laboratory Techniques and Preparation of Samples," includes sections on gas cells, matrix isolation procedures and some additional advanced techniques, but not in great detail.


This book, as a whole, is an excellent introductory text for the practicing infrared spectroscopist. Chapter 5, "Sample Handling and Techniques" is particularly suitable for students. Topics covered in this chapter include use of gas cells with a vacuum line, high pressure gas cell procedures, and details of other techniques mentioned in reference 1, but with less detail.


Chapter 2, section 6, "Sample Handling Techniques" is a short section describing the usual techniques for handling gases, liquids and solids. A description for a low temperature cell is also given.


Raman Texts:

Since many sampling accessories depend partly on the particular model or construction of the spectrometer, we include only two references on sample handling in Raman spectroscopy.


The general text is more theoretically oriented and devotes only five pages to general sample handling.


Chapter 1, "Recent Techniques in Raman Spectroscopy" by W. Kiefer describes several relatively advanced sampling techniques. For materials which decompose through laser heating, dynamical methods, such as, the rotating sample, continuous flow and surface scanning procedures are discussed.

FTS COURSE TO BE GIVEN IN BOSTON

The SAS short course in Fourier Transform Spectroscopy is planned for October 28-29, 1978, in connection with the PACSS meeting. Instructors will be Prof. Peter R. Griffiths, Ohio University, and Prof. James W. Cooper, Tufts University. The course has been revised and updated and will be presented entirely live in Boston. It will be of great value to anyone working in IR or NMR FT Spectroscopy.

An overview of FT spectroscopy, as presented in this course, provides a strong background in theory and applications. The course starts at 4 PM Saturday, October 28.

Pre-registration cost (through Oct. 13) is $100 for SAS members and $125 for others. After October 13, costs are $125 and $150 respectively. Also required is a copy of the book "Fourier Transform Spectrometry" by P. R. Griffiths ($40).

Remittance (payable to Society for Applied Spectroscopy) should be sent to:

Dr. J. G. Grasselli
The Standard Oil Company (Ohio)
4440 Warrensville Center Road
Cleveland, OH 44128
(216) 575-6331

NOMINATIONS FOR BOARD OF MANAGERS

Your help is needed in nominating candidates for the Board of Managers. Two positions will be open with the 1979 retirement of Jack Koenig and Ira Levin. Nominees should know about and agree to the nomination; they should have a strong interest in furthering the development of molecular spectroscopy, and they should be willing and able to attend board meetings and do some homework. Please send nominations to Dr. R. W. Hannah, c/o The Perkin-Elmer Corp., Main Avenue, MS-94, Norwalk, CT 06856 before November 1.
Within the past several years, biochemists and biophysicists have made astounding progress in contributing to the appreciation of the structure and properties of biological membranes. It is clear that many of the advances in understanding the molecular architecture of lipid bilayer (membrane) assemblies stem from the recent applications of sophisticated physical techniques, which include particularly the use of specific spectroscopic procedures for determining the dominant lipid-lipid and lipid-protein interactions in both model and real biological membranes. Within this truly burgeoning, biologically important field of study, vibrational techniques (with an emphasis on Raman spectroscopy) provide perhaps one of the most fertile approaches for assigning molecular origins to many of the basic dynamical processes occurring in the membrane bilayer.

Since a number of laboratories are engaged in vibrational studies of membranes and related systems (for example, W. Petiaca, U. of Ore.; R. Mendelsohn, Rutgers University; D. Wallach, Tufts Univ.; H. Matish and F. Bernstein, McGill, Ottawa; B. Bulkin, Polytechnic Inst. of New York; J. Sheridan, Naval Res. Labs; and ourselves at the National Institutes of Health), I want to mention briefly several of the current approaches used in characterizing lipid bilayers. For defining more completely the lipid-lipid interactions relevant to bilayer functions, the vibrations involving the lipid hydrocarbon chains often give rise to the most useful spectral transitions. These vibrations include the methyl and methylene stretching modes (2900 and 2100 cm\(^{-1}\) regions, respectively), the CH\(_2\) deformation modes (1450 cm\(^{-1}\) and twisting modes (1300 cm\(^{-1}\)) and the C-C skeletal stretching modes (1065-1150 cm\(^{-1}\)). Because different spectral regions are associated with specific molecular rearrangements, as, for example, the intrachain trans/gauche isomerization processes (1065-1150 cm\(^{-1}\)) or lateral chain packing effects (2900,2100 and 1450 cm\(^{-1}\), surveys of several spectral areas are required to specify both the inter- and intramolecular order present in lipid aggregates. As membrane bilayers exhibit gel liquid crystalline phase transitions, many spectroscopic studies emphasize the size of the cooperative unit undergoing the transition and the ordering and disordering effects on the lipid matrix from intercalated molecules, such as representative anesthetics and propranolol containing systems.

For distinguishing between the Raman transitions of the integral membrane protein and the lipid matrix, organisms such as spleen/eplasma laidlawi can be grown in media containing a long chain, deuterated carboxylic acid. Under growth conditions, the cultured organism incorporates the deuterated chains into the cell membrane bilayer. Through observation of the all-trans and gauche conformer transitions characteristic of deuterated hydrocarbon chains, the gel liquid crystalline phase transition of the biological organism can be monitored, the relative amounts of gel phase and liquid crystalline phase during growth conditions can be determined, and, most importantly, the aggregation dynamics of various types of integral proteins can be followed as a function of temperature.

In this necessarily brief comment, I have described an interdisciplinary area, the elucidation of the structural properties of real and model biological membranes, for which vibrational spectroscopy clearly offers a unique and potentially incisive tool for unraveling many of the subtle biological processes occurring at the cellular level.

SPECTROSCOPIC VIBRATIONS - Ira W. Levin

Anachem Award to Jenny Grasselli

Mrs. Jeannette G. Grasselli has been selected as winner of the 1978 Anachem Award by the Detroit Association of Analytical Chemists. The award is presented annually to an outstanding analytical chemist. She is based on service to the profession through research, administration, teaching, or other activities that advance this branch of chemistry as a profession. The award will be presented November 1 at the FACSS meeting in Boston, Massachusetts.

Mrs. Grasselli is Supervisor of the Molecular Spectroscopy Section at the Research and Engineering Department of The Standard Oil Company (Ohio). She obtained her B.S. degree in Chemistry at Ohio University and her M.S. at Case Western Reserve University. She holds one patent, has authored forty-five publications and has been co-editor of two books in the field of Molecular Spectroscopy. She is an invited lecturer at the Detroit Polymer Institute, at Case Western Reserve University, and at the Bowdoin College summer course on Infrared Spectroscopy: Advanced Applications.

She has been a tour speaker for the national ACS, SAS, and Chemical Institute of Canada, and is a charter member of the Sohio Speaker's Bureau with over 200 talks to primarily high schools and colleges. In addition to Molecular Spectroscopy, her interests are in continuing education activities and in promoting communications between the academic and industrial spheres.

In 1970, she served as the National President of the Society for Applied Spectroscopy. She was active in organizing FACSS, the Federation of Analytical Chemistry and Spectroscopy Societies, and is the secretary of its Governing Board. She has served on the Advisory Board of Analytical Chemistry, and is a member of the Evaluation Panel in Analytical Chemistry for the National Bureau of Standards. She is an Associate member of the International Union of Pure and Applied Chemistry (IUPAC) Spectroscopy Commission. Other activities include the Cobentz Society, ACS, Phi Beta Kappa, Iota Sigma Pi, Cleveland Council on World Affairs, and the Central United States Ski Club.

In 1963, she received the Eleventh Annual Chemical Profession Award from the Cleveland area chemistry and chemical engineering societies. In 1965, she received the Certificate of Merit Alumni Award from Ohio University. In 1978, she received an honorary Doctor of Science degree from her alma mater, Ohio University.
**FACSS MEETING PROGRAM**

A number of sessions on vibrational spectroscopy at the upcoming FACSS meeting will be of interest to Cobolts Society members. The meeting is scheduled for October 30 - November 3, 1978, at the Sheraton-Boston Hotel in Boston, Mass.

**MONDAY, OCTOBER 30**

**Applied IR Workshop** - 9:00 a.m. and 2:00 p.m.

Keynot Speaker, Jeannette Grasselli, Standard Oil.

Basic Infrared Technology - an Overview. Hands on Equipment Demonstration.

Molecular Spectroscopy - 10:00 a.m.

"Raman Spectroscopy of Associated Species: Spectral and Electrochemical Studies of Associated Metal Species." H.S. Gold, University of Delaware, R. F. Buck, University of North Carolina


"The Fourier Transform Raman Spectroscopy Problem." T. Hirschfeld, Block Engineering


"Quantitative NMR of Polymesters." J. Smith, P. Fletcher, PPR Industries.

Molecular Spectroscopy - 2:00 p.m.


"Derivative Spectroscopy." Jerry E. Cahill.

"Derivative Spectroscopy with the Varian Cary 219." M.J. Kelly and D.W. Priosner.


"Application of the CCD as a Molecular Absorption Spectroscopic Detector." Kenneth L. Ratzlaff and Steven L. Paul.


**TUESDAY, OCTOBER 31**

Williams-Wright Award - 9:00 a.m. (Sponsored by Cobolts Society) Awarded to Norman Wright.

Acceptance by R. O. Kagel, The Dow Chemical Co.

Historical Perspectives: Clara D. Craver, Bryce L. Crawford, Paul L. Wilks.

**Symposium on Quantitative IR Spectroscopy - 10:00 a.m.**

"The Rediscovered Significance of Vibrational Intensities." B. Crawford, Jr., University of Minnesota.

"Infrared Intensity Measurements and Standards." R. N. Jones, National Research Council of Canada.


**Symposium on Quantitative IR Spectroscopy - 2:00 p.m.**

"Design and Application of an Intelligent IR Data System." R.W. Hannah, Perkin-Elmer.


"Determination of Si Impurities by Fourier Transform Infrared Spectroscopy." S.C. Baber, Texas Instruments


"FT-IR Standards and Quantitative Infrared Spectroscopy." K.Krishman, Digilab, T. Hirschfeld, Block Engineering

"Water as a Solvent in Quantitative IR Measurements." W.L. Truett, R.J. Citerin, Foxboro/ Wilks.


**WEDNESDAY, NOVEMBER 1**

**Anachem Award Symposium** - 9:00 a.m.


"Applications of Computers in the Infrared Laboratory." R.W. Hannah, Perkin-Elmer


"LC-IR: Fact or Fantasy?" P.R. Griffiths, M.P. Fuller, D. Kuehl, Ohio University.

**Infrared - 2:00 p.m.**

"Revisiting the Absorption-Emission Spectroscopy Tradeoff in FT-IR." T. Hirschfeld, Block Engineering.

"Diamond Anvil Cells: A Microsampling Technique for FT-IR." L.D'Esposti, Digilab.


"FT-IR Correlation Spectroscopy." G. Wijntjes, Block Engineering.

"Examination of a Vapor Phase Infrared Library by Pattern Recognition Techniques." M.P. Delaney, P.C. Denzer, P.C. Uden, University of Massachusetts.