



Baltimore-Washington SPECTRUM

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LOCAL SECTION NEWS

I'm going out on a limb – two limbs actually! Our next speaker will be Dr. Richard Suenram from the Optical Technology Division at NIST. He will discuss Fourier Transform Microwave (FTMW) Spectroscopy and current applications to this determinative identification technique. So why did I claim that I was going out on a limb? The last opportunity that I had to chair the local section, I tended to deviate from topics focusing on more traditional AA and ICP inorganic metals analysis, and brought forward spectroscopic techniques used to perform organic analyses (since I am more of an organic chemist than an inorganic kind of guy). Well, lightning does strike twice, and the topic of this month's presentation on Thursday, November 4, 1999 will again explore the boundary between spectroscopy and analysis of organic compounds. I invite you to come learn about the utility of this exciting analytical technique.

The second limb has to do with the restaurant choice. Sir Walter Raleigh Inn in Montgomery Village has long been a favorite meeting location until the unfortunate "incident" that occurred in December 1998. I have discussed the matter and our concerns with the restaurant manager to ensure we do not have a repeat performance – he remembered the past situation (Diana must have made quite an impression), and promises me that the service will be as we remember from years past.

Many thanks to Mike Epstein for providing a web-based summary of our first meeting complete with digital photographs. Check it out at <http://www.spectrometer.org/bwsas>. Dr. Marcus Schuetz provided an excellent presentation and the turnout was equally impressive. Also, thanks are in order to members of the local section including Kris Patterson for compiling the newsletter (also now available via e-mail in pdf format – contact her to receive the newsletter electronically), Dave Hill for distributing the newsletter, Jeb Taylor for serving for so many years as our dedicated treasurer, and chair-elect John Canham for working to get new local section sponsors. Speaking of our sponsors, please welcome our newest sponsor, Spectral Dimensions of Olney, Maryland. Its product line encompasses systems for performing FT-IR, NIR, and Raman imaging

in a variety of basic research and process control applications.

I hope that all SAS participants to the FACSS meeting have a great time in Vancouver, British Columbia. Come to our next local chapter meeting on Thursday, November 4th and bring your FACSS updates to the folks who were unable to make this year's meeting!

Sincerely,
Larry Pollack
Chairman, Baltimore – Washington Section, SAS

Society for Applied Spectroscopy

To advance and disseminate knowledge and information concerning the art and science of spectroscopy and other allied sciences.

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Dr. Richard Suenram is the Group Leader of the Spectroscopic Applications Group in the Optical Technology Division at NIST where he has worked since 1975. He has received the Bronze Medal Award from the US Department of Commerce for his contributions to the spectroscopic sciences. Prior to joining NIST, Dr. Suenram was employed in industry by Rohm and Haas. He has a Ph.D. and MS in Physical Chemistry, from the University of Kansas (Lawrence) and the University of Wisconsin (Madison), respectively. His research interests are in the areas of hydrogen-bonded and van der Waals complexes, atmospheric molecules, reaction mechanisms, and conformational equilibria of large organic compounds using Fourier Transform microwave (FT MW) spectroscopic techniques. He has also extensively used FT MW spectroscopy for trace gas analysis. Currently, Dr. Suenram is developing new terahertz instrumentation and methods for studying ro-vibrational spectra of molecules in this region.

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Meeting Announcement

Fourier Transform Microwave Spectroscopy; Historical Perspectives and the Evolution Toward an Analytical Technique

Dr. Richard Suenram, Ph.D.
NIST

In 1981 the late Willis H. Flygare and his group of graduate students and post doctoral associates developed a new microwave spectroscopic technique that revitalized the field of rotational spectroscopy. The new technique involved the use of a tunable Fabry-Perot microwave cavity in conjunction with a pulsed molecular beam valve and pulsed microwave radiation. The technique has evolved into what is now known as Fourier Transform Microwave (FTMW) spectroscopy. As it was initially introduced, it proved to be a powerful technique for studying the rotational spectra of hydrogen bonded dimers and van der Waals complexes. This trend continued throughout the 1980's as more and more research laboratories around the world constructed this type of instrument. It is estimated that today there are approximately 30 laboratories that have one or more of these instruments in use. The first NIST instrument was constructed in 1985 and was used to study a number of van der Waals complexes as well as hydrogen bonded dimers and trimers. More recently the emphasis at NIST has shifted toward the analysis and characterization of larger organic monomers with molecular weights in the 100 to 200 amu range. The 1K temperature of the molecular beam greatly simplifies the spectra of these compounds and permits their analysis. Over time, many changes have been made in the instrument resulting in dramatic improvements in overall sensitivity of the technique as well as greatly improved ease of use. In the early 1990's it became clear that this technique could offer some advantages to the analytical chemistry community as a new spectroscopic technique for trace gas analysis. Several laboratories have begun to address this issue. In the presentation, general historical perspectives will be given, in addition to describing details of the development of an analytical prototype FTMW spectrometer at NIST.

Date: Thursday, November 4, 1999

Place: Sir Walter Raleigh Inn
19100 Montgomery Village Avenue
Gaithersburg, Maryland
(301) 258-0576

Time: 6 pm Social Hour, 7 pm Dinner, 8 pm Seminar.

Cost: \$20 (\$12 students) Menu: Choice of 1) Thick Cut Prime Rib, 2) Baked Orange Roughy, 3) 12 Ounce Sirloin Steak, or 4) Hawaiian Chicken Breasts.

Included with each entrée is the extensive salad bar/bread, rice pilaf, coffee, tea, soft drink, and chocolate mousse.

PLEASE INDICATE MENU CHOICE WHEN LEAVING YOUR RESERVATION.

Reservations: Please make your reservations by NOON, Tuesday, November 2, 1999 by calling Larry Pollack at work (703) 810-4351 or at home (703) 256-6769, or e-mail at larry.pollack@dtra.mil

Directions: From I-270, take the Montgomery Village Avenue exit (Exit 11: Route 124, Montgomery Village Avenue). Travel east on Montgomery Village Avenue for approximately 1.5-2.0 miles, passing Lake Forest Mall and then a large lake on the right. The restaurant, a white house, is on the left in a strip mall shortly after the lake..

November Historical Events In Spectroscopy
by Leopold May
Catholic University

- November 4, 1958** The Society for Applied Spectroscopy, now the New York Section, was formed on this day in New York City.
- November 6, 1857** The first chief chemist of the US Bureau of Standards (now the National Institute of Standards and Testing), William A. Noyes, was born on this date. He served as editor of the Journal of the American Chemical Society from 1902 to 1917.
- November 7, 1888** Chandrasekhara V. Raman who discovered the Raman effect for which he received the Nobel Prize in 1930, was born on this day.
- November 11, 1925** The discovery of cosmic rays was announced on this day in Madison, Wisconsin.
- November 13, 1831** James Clerk Maxwell, who did research in electromagnetic theory and kinetic theory of gases, was born on this date.
- November 23, 1887** Henry G. J. Moseley, born on this day, discovered that the x-ray frequency is related to atomic number of the element in 1913. He was killed in World War I.
- November 26, 1934** Beckman Instruments, Inc. was incorporated on this day.
- November 27, 1914** Bryce Crawford, Honorary Member of SAS, was born on this day. He did research in infrared spectroscopy.
- November 29, 1936** The birthday of Yuan T. Lee who used a specially designed mass spectrometer that could separate and identify reaction products. He shared the Nobel Prize in 1986 with Dudley R. Herschbach and John C. Polanyi.

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Dated Material - SAS Meeting Notice