

Indiana Section of the Society for Applied Spectroscopy

January/February 2002 Newsletter

ISSAS 2000-2001 SEMINARS

The second seminar hosted by the Indiana Section of the Society for Applied Spectroscopy was held on Monday, December 3, 2001 and featured the work of Professor David Lubman from the University of Michigan. He presented his research on the 2-D liquid separations/mass mapping method for interlysate comparisons of cancer progression. We would like to thank Professor Lubman and all who attended this seminar.

Our third seminar in the 2001-2002 series will feature the research of Professor Mary Carroll from Union College in Schenectady, NY. Professor Carroll will be speaking about her research on the implementation of molecular spectroscopy for the study of sol-gel systems and on the development of inexpensive fiber

optic-based chemical sensors. The seminar will be held at the Indiana University Chemistry Building (Room C127) at 6:00pm on Monday, February 18, 2002. Dinner with Professor Carroll will be held after the seminar at Janko's Little Zagreb. If you are interested in attending the dinner following the meeting, please RSVP before Thursday, February 14 by contacting Bill Wetzel (wwetzel@indiana.edu).

The national tour speaker selection committee has recognized seven candidates as potential tour speakers this summer. The ISSAS would like to choose a speaker who would be of greatest interest to our members. Please review the candidates below and send your tour speaker preferences to Bill Wetzel (wwetzel@indiana.edu) by February 22, 2002. The ISSAS will take your suggestions into

consideration when requesting our tour speaker this year. The candidates for the tour speaker and their research areas are as follows:

Dr. Brian C. Smith
Spectros Associates
The Science and Business of Spectroscopic Consulting

Dr. Richard Newmark
3M Company – Retired
(1) *Solution NMR of polymers or*
(2) *Solution NMR in an Industrial Analytical Laboratory*

Prof. Dan Higgins
Kansas State University
High Resolution Optical Microscopy and Characterization of Thin Film Optical Materials

Prof. Andre Sommer
Miami University – Ohio
Evanescent Wave Imaging and Spectroscopy

Dr. Susan Plunkett
Philip Morris Company
Multi-component analysis of Cigarette Combustion Gases Using a High Resolution Mid-Infrared Tunable Diode Laser Spectrometer

Dr. Lei Geng
University of Iowa
Chemical and Biomedical Analysis with 2D Fluorescence Correlation Spectroscopy

Dr. Khalid Thakur
3M Company
Solid State NMR of polymers

Dr. Steven Soper
Louisiana State University
Time-Resolved Near-IR Fluorescence: Adding Another Layer of Information to Multiplexed Assays in Genomics

A tentative schedule for the remaining seminars this year is as follows:

April 22, 2002
Dr. Michelle V. Buchanan
Director of the Life Sciences Division at Oak Ridge National Laboratory
Functional Genomics

April / May 2002
Dr. Gary W. Small
Ohio University
Near-infrared, and passive infrared spectroscopy

Summer 2002
SAS Tour Speaker
To be announced

More information about future seminars and the SAS tour speaker will follow in subsequent newsletters. Up-to-date seminar information can be found on the ISSAS website at the address: <http://www.indiana.edu/~issas>.

SAS MEETING DELEGATES

The ISSAS is seeking qualified individuals who are interested in being delegates to the Society's Governing Board meetings held in conjunction with the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) meetings. The first of such meetings will be held in Providence, Rhode Island on Tuesday, October 15, 2002. If elected to the position, you will be required to vote on behalf of the ISSAS at these meetings. A travel honorarium of \$200 per meeting served will be given to those who are elected. If you will be attending the FACSS meeting and would like to assist the ISSAS in the planning of SAS events, please contact Bill Wetzel (wwetzel@indiana.edu).

GRADUATE STUDENT AWARD

Each year the SAS presents its Graduate Student Award to a graduate student in recognition of outstanding research in the area of spectroscopy. Any full-time graduate student doing research in the field of spectroscopy is eligible for the award. The award consists of a plaque and coverage of travel expenses to the FACCS meeting in October to accept the award. Nominations may be made by any

member of the society or local sections and should be submitted on or before June 1. Please include a letter of nomination with a copy of the student's curriculum vita.

THIS MONTH IN SPECTROSCOPY

In December of 1973, which two scientists first reported the use of a Fourier Transform Ion Cyclotron Resonance Mass Spectrometer for the broadband detection of a wide mass range?

In December of 1973, Melvin Comisarow and Alan Marshall described an ion cyclotron resonance mass spectrometer that allows mass determination with ultra-high resolution. Prior to these developments, a slow scan across the entire mass spectrum was necessary for mass analyzers that employed a narrow window. However, with the Fourier data reduction, the time required for complete spectral collection is reduced by orders of magnitude. This type of configuration allows the broad-band detection of a wide mass range, without the long observation period inherent to conventional slow-sweep operation. This, of course, led to the development of the FT-MS instruments that show great

promise in many applications involving the analysis of complex mixtures.

Spectroscopy Trivia:

In February of 1966, which two scientists first reported laser action of a fluorescent organic dye compound?

The answer to this question can be found in the next addition of "This Month in Spectroscopy" or log onto the ISSAS trivia page at <http://www.indiana.edu/~issas/trivia.html>.

MEMBERSHIP RENEWAL

If you have not already renewed your membership to SAS for 2002, please consider doing so today. Your last issue of the journal, *Applied Spectroscopy*, will be February. You can avoid any interruption of service by renewing now. You can renew via a secure server at www.s-a-s.org, or by calling 301-694-8122.

Also, your local Indiana Section of the Society for Applied Spectroscopy is always looking for new members. We invite you to recommend membership to any of your colleagues or students who you may feel would benefit from membership in such an

organization. The fee for joining is very reasonable for both professional and students alike. Membership also includes a subscription to the monthly journal *Applied Spectroscopy*. For further information on ISSAS membership, please feel free to contact any of the officers or visit our website at the following address:

<http://www.indiana.edu/~issas>.

ISSAS ONLINE

Please remember to check us out at our website! The ISSAS homepage will keep you updated on local section and national events as well as provide information about our corporate sponsors. Please visit our website at the following address: <http://www.indiana.edu/~issas>.

CONTACT INFORMATION

You may contact any of the ISSAS officers via phone (812) 855-7905, fax (812) 855-0958, email at (issas@indiana.edu), or write to:

Society for Applied Spectroscopy-
Indiana Section
Department of Chemistry
Indiana University
Bloomington, Indiana 47405

Indiana Section for the Society for Applied Spectroscopy
2001-2002 Seminar Series

**ADVENTURES IN MOLECULAR SPECTROSCOPY AT AN
UNDERGRADUATE INSTITUTION**

Professor Mary K. Carroll

Department of Chemistry Union College Schenectady, NY 12308
<http://www.union.edu/PUBLIC/CHMDEPT/Faculty/carroll.html>

The Carroll group employs molecular spectroscopic methods, with an emphasis on visible fluorescence spectroscopy, to three areas of research: (1) fundamental studies of dye/surfactant and dye/sol-gel interactions, (2) sol-gel-based chemical sensors, and (3) development of small, inexpensive instruments, including fiber-optic chemical sensors, which use a diode laser as the optical excitation source. Each of these areas has lent itself well to summer and senior-year undergraduate student research projects. This presentation will include an overview of our research, with particular emphasis on two recent projects. First, we have examined the interactions of cationic oxazine dyes with sodium dodecyl sulfate (SDS, a micelle-forming, anionic surfactant) in aqueous solution, using UV-Visible absorption and fluorescence spectrometry, fluorescence anisotropy, and phase-resolved fluorescence lifetime measurements. There are significant spectroscopic changes as a function of SDS concentration, which demonstrate that different oxazine/SDS interactions are occurring below and above the critical micelle concentration of SDS. Second, we are developing a variety of simple optical sensors using sol-gel platforms and well-established indicator chemistry. Preliminary data on a low-pH sensor using the indicator Eosin-Y will be shown. In addition, the presentation will include some comments on the excitement, joy and challenge of establishing and maintaining a research program at an undergraduate institution.

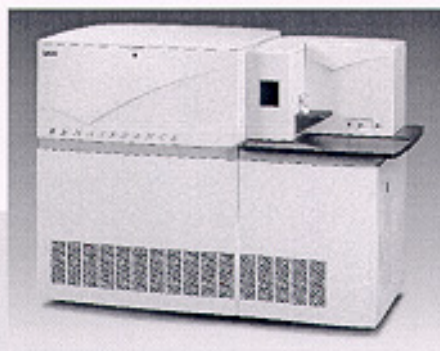
6:00 PM

Monday, February 18, 2002
Chemistry Building Room C127
Indiana University
Bloomington, Indiana 47405

Biographical Sketch

Mary K. Carroll earned a B.S. in chemistry from Union College (1986), and a Ph.D. in analytical chemistry from Indiana University, Bloomington (1991). Following a postdoctoral stint at the University of Massachusetts at Amherst, Mary joined the faculty of Union College in 1992. She received the 1995 Stillman Prize for outstanding teaching, and was promoted to Associate Professor in 1998. Her research focuses on chemical sensors, development of spectroscopic instrumentation using diode lasers as light sources, and fundamental studies of dye/surfactant and dye/sol-gel interactions using molecular spectroscopic techniques. At Union, she has supervised 23 undergraduate research students, thirteen of whom have gone on to perform graduate work in chemistry-related fields.

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Post Seminar Dinner with Professor Mary Carroll

Monday, February 18, 2002

Seminar
Chemistry Building
Indiana University
Bloomington IN
6:00 p.m.

Dinner
Janko's Little Zagreb
223 West Sixth Street
Bloomington IN
7:30 p.m.

Please RSVP to Bill Wetzel (wwetzel@indiana.edu or (812) 855-7905) by Thursday, February 14, 2002.

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6245 S. Oak Park Avenue • Chicago, IL 60638
Phone: 773-229-0099
Fax: 773-229-0313

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