

The 52nd Annual ASMS Conference Goes Country

Nashville plays host to this month's event.

Joseph Walsh, *Spectroscopy* Assistant Editor

The 52nd American Society for Mass Spectrometry (ASMS) conference on Mass Spectrometry and Allied Topics will be held May 23–27 at the Gaylord Opryland Hotel in Nashville, TN. Like its predecessors, this year's conference will be geared toward promoting and disseminating knowledge of MS and its allied topics, with the overall goal being to provide new knowledge that will help further the advancement of techniques and instrumentation in MS, as well as fundamental research in chemistry, geology, the biological sciences and physics.

As a service to the 5200 expected attendees, *Spectroscopy* presents the following conference preview.

Short Courses

The presentation of short courses once again will be at the heart of this year's conference. Taught by volunteer instructors, the informative classes are designed for audiences of varying skill levels and areas of study, and range from the study of basic theories to the use of specific applications.

"Members suggest short courses, and that's how they're developed," says Judith A. Sjoberg, executive director of ASMS. "Most of the courses, with the exception of one, are repeats from previous years. They're always sold out."

"Usually, when we take on a short course, it's with the understanding it will run for at least three years," she continues. "Some of these courses have been offered for longer than that, with some of those having changes in instructors."

Here is an overview of this year's 10 short courses:

• **FT MS: Principles and Applications:** Robert T. McIver, Gary Siuzdak, Jon Amster, and Sunia Afzaal Trauger, Instructors. This course is intended for individuals who have no prior knowledge of Fourier-transform mass spectrometry (FT MS). It also should prove to be useful for those who have moderate experience with FT MS, but would like to develop a better understanding of its underlying fundamental principles.

• **Interpretation of Mass Spectra:** Lawrence R. Phillips, John H. Callahan, Peter Dreifus, James Kelley, and Amina Woods, Instructors. An introductory-level course on the qualitative interpretation of mass spectra of organic, biological, and biochemical compounds. The course will be taught through the use of practical examples and is targeted at those individuals

with knowledge of organic chemistry and organic structures.

• **LC-MS: The Techniques of Electrospray and APCI:** Robert D. Voyksner, Instructor. One of the longest running courses at ASMS, it is designed for chromatographers or mass spectrometrists who want to be successful in solving problems by LC-MS. The course will cover the atmospheric pressure ionization (API) techniques of electrospray ionization (ESI), pneumatically assisted electrospray, and atmospheric pressure chemical ionization (APCI) using single quadrupole, triple quadrupole, and ion trap mass analyzers.

• **MALDI-TOF MS: Fundamentals and Applications:** Martha M. Vestling and Kevin G. Owens, Instructors. Now in its fifth year, this course discusses the basic instrumentation and theory of matrix-assisted laser desorption ionization time-of-flight (MALDI-TOF) MS. An overview of current instrumentation and practices will be presented, including a discussion of the relative advantages of linear and reflectron instruments.

• **Mass Spectrometry in Drug Discovery: From Target Identification to IND Enabling Studies:** Daniel B. Kassel and Mike S. Lee, Instructors. In its first year as part of the conference, this course will focus on providing a firm understanding of the drug discovery process, from initial target identification through investigational new drug (IND) enabling studies. It also will teach attendees how to learn from, and apply, the numerous types of MS studies carried out to support these drug discovery efforts.

• **MS-MS: Fundamentals and Applications:** Vicki Wysocki, Arpad Somogyi, George Tsaprailis, Linda Breci, and Paul Haynes, Instructors. This course is targeted at new users of MS-MS who have basic knowledge of MS. Participants also should be familiar with modern ionization methods, such as ESI and MALDI, and understand the basic principles of mass analysis with different mass analyzers.

• **Practical LC-MS:** Jack Henion, Instructor. Another one of the conference's longest running courses, it will cover commercially available and new approaches to accomplishing online LC-MS analyses. The course will provide introductions to HPLC and MS, and themes common to all LC-MS interfaces, with an emphasis on those phenomena that are important to successful LC-MS experiments. A summary of the historical development, basic hardware, and representative exam-



ples of earlier techniques, which include continuous flow fast atom bombardment (FAB), thermospray, and particle beam LC-MS, also will be presented.

• **Proteins and Peptides: Characterizations by MS-MS-MS:** Arthur Moseley, Kevin Blackburn, and Doug Sheeley, Instructors. A fairly new, advanced-level course, this is targeted at scientists who want to learn specific techniques for the MS and MS-MS characterization of peptides and proteins. Fundamental aspects of protein chemistry, sample preparation, MS (hardware and software), and sample introduction systems (nanospray, capillary LC, LC-LC, and CE) will all be discussed.

• **Quadrupole Ion Trap Mass Spectrometry and Tandem Mass Spectrometry:** Gary L. Glish, Richard Vachet, and Nathan Yates, Instructors. This course will present the ion physics, ion chemistry, and aspects of instrumentation necessary for a basic understanding of modern quadrupole ion trap MS and quadrupole ion trap tandem MS.

• **Quantitative Mass Spectrometry:** Cecilia Basic, Robert Bethem, and Dwight E. Matthews, Instructors. An introductory/intermediate level course, it will explore the principles of quantitative MS. A general discussion of principles will take place, and will be reinforced through exemplary papers in the field.

Lectures and Oral Sessions

The conference's initial plenary lecture will be presented by Midwest Research Institute's David R. Franz, and is titled, "Overview of the Bioterrorism Threat and What We Can Do to Prepare and Respond."

"We had a couple of lectures on antiterrorism at last year's conference [in Montreal, Canada]," Sjoberg says, "because forensics is really a growing aspect of the conference."

While forensics is becoming an increasingly prominent topic at ASMS, as evident also by the oral sessions, "MS Investigations of Terrorism," and "MS Investigations of Criminal Activities," the event has been, and continues to be, heavily pharmaceutical and biochemistry centered.

"The conference used to be more technique driven," Sjoberg says. "Everyone

wanted to know about LC-MS, electrospray, and those techniques. Now it's more application driven.

"The impact of the pharmaceutical, proteins and peptides, and drug metabolism issues is very, very strong," she continues. "This has been the trend for about the last five years."

With this in mind, here is a sampling of the oral sessions that will be offered at this year's conference:

- "Instruments and Methods for Studying Peptide Fragmentation"
- "MS in Drug Discovery and Development ADME Studies"
- "Changes in Protein Abundances in Cell Growth and Disease"
- "Protein Conformation and Binding"
- "Membrane Proteins and Hydrophobic Peptides"
- "Protein Analytics: Top-Down Sequencing"
- "Protein Phosphorylation Analyzed by MS"
- "Mechanisms of Peptide Fragmentation"

"People should take away new knowledge from the conference," Sjoberg says. "This is a very knowledge-based conference. People come to hear and see what's going on and to check out new techniques and new applications."

Awards

The presentation of the conference's annual awards — The Award for a Distinguished Contribution in Mass Spectrometry and The Biemann Medal — will help honor the past, present, and future of MS.

The Award for a Distinguished Contribution to Mass Spectrometry recognizes a focused, singular achievement in, or contribution to, fundamental or applied MS. The honoree is being recognized for having made a contribution that has had a significant impact on the fundamental understanding and/or



practice of MS.

Michael T. Bowers of the University of California at Santa Barbara will be presented with this year's honor for his Average Dipole Orientation (ADO) theory. Bowers' pioneering theory, which yielded an estimated collision rate within 10% of the experimentally determined value, continues to provide the theoretical framework for all ion molecule reaction rate coefficient determinations some 25 years after its introduction.

While Bowers will be presented with an award that recognizes his time-tested contributions, The Biemann Medal, presented in honor of Professor Klaus Biemann, recognizes a significant achievement in basic or applied MS made by an individual early in their career.

This year's winner is John R. Yates of Scripps Research Institute for his achievements and contributions to protein sequence analysis by tandem MS through his development of software methods to search proteins and nucleotide databases with tandem mass spectral data on peptides generated by enzymatic digestion of proteins in complex mixtures. His method has made the automated high-throughput analysis of the proteins in macromolecular complexes possible, and has revolutionized the approach of comprehensive protein analysis in cell culture and tissues by MS. ■

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