INTRODUCTION TO ELECTRON MICROSCOPY APPLICATIONS
May 15-16, 2012

The goal of this 2 day short course is to familiarize the attendees with the applications, capabilities, and limitations of common electron microscopes and associated techniques. By the completion of the course, each attendee will have a better understanding of what can be expected of a microscopy services lab, what type of information can be obtained from each instrument/technique, and how to interpret the data provided by electron microscopy.

The techniques discussed in this short course will be Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Energy Dispersive X-ray Spectroscopy (EDXS), and Focused Ion Beam (FIB). The course will familiarize the attendees with the basic hardware and functions of the instruments, explain how images are formed and how to interpret them, and provide live demonstrations on each instrument.

Course Highlights
- Introduction and Overview of Instrument Hardware
- Sample Preparation and Handling
- Data Acquisition and Interpretation
- Capabilities and Limitations of Techniques
- Demonstrations

Who Should Attend
This course is intended for non-experts who are responsible for requesting microscope services, or who will be receiving and interpreting results.

Instructor
Roger A. Ristau, PhD, Lead Analytical Scientist in the IMS Microscopy Lab

Register Online!
www.ims.uconn.edu/associate/a_events.html

AN OVERVIEW OF SURFACE ANALYSIS TECHNIQUES
June 19-20, 2012

This short course focuses on three of the most common surface analytical techniques: Auger Electron Spectroscopy (AES), X-Ray Photoelectron Spectroscopy (XPS) and Secondary Ion Mass Spectrometry (SIMS). The overview of each technique includes concepts and physical principles; instrumentation; potential artifacts; and elemental and chemical specification. Quantification and comparative advantages and limitations of each technique will be reviewed. Methods of obtaining information as a function of depth (depth profiling) are also discussed.

Other, less common surface analysis techniques, including Rutherford Backscattering (RBS) and Ion Scattering Spectroscopy (ISS) will also be reviewed. The application of instrumentation not typically thought of as surface analytical instrumentation, such as Fourier Transform Infrared Analysis (FTIR) and Thermal desorption/Gas Chromatography/Mass spectrometry, will also be introduced.

Numerous examples will be used throughout the course to illustrate the use of the above techniques in a wide variety of applications.

Course Highlights
- Concepts and Principles of AES, XPS, and SIMS
- Comparative Advantages and Limitations
- Basic Instrumentation
- Numerous Application Examples

Who Should Attend
This course is intended for non-experts in the field. Attendees will acquire an appreciation of the capabilities and limitations of common surface analytical techniques and improve their ability to make more informed decisions regarding technique selection, thereby increasing the effectiveness of and reducing the cost of analytical services.

Instructor
Edward A. Kurz, PhD, Director, IMS Associates Program

SMART POLYMERS: OLD DOGS, NEW TRICKS
October 17, 2012

The goal of this one-day short course is to familiarize attendees with state-of-the-art developments in polymer based smart materials. Smart polymers show a dramatic change in shape, volume, optical, physical or chemical properties when exposed to stimuli such as thermal, magnetic, electric, pH, light or mechanical forces. This unique responsive feature of smart polymers can be exploited in a number of applications.

Course Highlights
- Introduction and overview of smart polymers
- General bottom-up and top-down synthetic ap proaches
- Implications of polymer physical properties on the final application
- Possibility for future applications in smart skins, robotics, camouflage, and advanced delivery devices

Who Should Attend
This course is intended for scientists and engineers with some background in smart polymers who are interested in exploiting unique features of these materials in various applications including biomedical features, catalysts, display technology, mechanical property modifiers, actuators, coatings, switches, valves etc.

Instructors
Rajeswari Kasi, PhD, Assistant Professor, Chemistry
Montgomery Shaw, PhD Professor Emeritus, Chemical Engineering

For Additional Details
Check our Website
http://www.ims.uconn.edu/associate/a_events.html
or Call Us
860-486-5874

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Course Selections
___Intro. to Electron Microscopy Applications
___Overview of Surface Analytical Techniques
___Smart Polymers: Old Dogs, New Tricks

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Online: www.ims.uconn.edu/associatae/a_events.html

By Mail registration information with check/PO
Attn: Rhonda Ward
Institute of Materials Science
University of Connecticut
97 N. Eagleville Road, Unit 3136
Storrs, CT 06269-3136

Fax/Email to:
860-486-4745; rhonda.ward@ims.uconn.edu

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The IMS Associates Program assists industry with short term projects in research, development and manufacturing projects where expertise or facilities are not readily available from the private sector. For more information see IMS Outreach: http://www.ims.uconn.edu/.

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Introduction to Electron Microscopy Applications

An Overview of Surface Analytical Techniques

Smart Polymers: Old Dogs, New Tricks

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