

Minnesota Microscopy Society Newsletter



Local affiliate of Microscopy Society of America
Local affiliate of Microbeam Analysis Society

MMS October 1997 NEWSLETTER

MMS President's Message

Welcome to a new year of the Minnesota Microscopy Society! Hope everyone had a refreshing summer and you were able to take a little time to stop and smell the roses---since our rose season tends to be rather short. First of all, I would like to thank Stuart McKernan and last year's board for an outstanding year. You've left some big shoes to fill, but I feel we (this year's board and myself) are ready for the challenge. I think we have an interesting program shaping up for this year. Our Fall Buffet is just weeks away and the topic is something that will be in constant supply in just a few months---snowflakes. In October, we are planning a trip to visit with our friends at the Mayo Clinic. If you have never been there, I highly recommend it. We are planning on having a tour of the Clinic, seeing the EM facility, and then getting a demonstration from the Biomedical Imaging Resource (BIR). One of the capabilities of the BIR is being able to take serial sections and build 3-dimensional images. Those that make the trip will have a very informative and fascinating experience. Special thanks to our Corporate Sponsors! Many of the events we are able to hold each year would not be possible without their generosity. If you see a rep from one of our sponsors at an event, be sure to make them feel welcome. If you have any questions, concerns, or recommendations, feel free to contact me or any of the board members.

Jeff Payne,
733-2352

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October 1997 Meeting

MAYO CLINIC TOUR

Biomedical Imaging Resource (BIR) & Electron Microscopy Facility

October 30, 1997

(Note revised date for this event)

Rochester, MN

The tour of the Biomedical Imaging Resource (BIR) and the Electron Microscopy Facility at the Mayo Clinic is re-scheduled for Thursday, October 30th. A chartered bus will be leaving the Mall of America Transit Station (see directions below) at 11:30 a.m. We will have the demo/tour of the BIR, the EM facility, and take an informal walking tour of some of the areas of the Clinic before going to a new brew pub in town for dinner. We should be back to the Mall of America by 8:00 p.m.

Special Bus Ride Program: In the bus on the trip down to Rochester, Sue Okerstrom will give a presentation on *The State of Microscopy in China*. Sue visited China from June 29-July 27, 1997. The first half of the trip was spent setting up a laboratory at a new Medtronic pacemaker manufacturing facility in Shanghai. On the second half of the trip, Sue was part of a Microscopy Delegation to visit Beijing, Nanjing, and Shanghai through the Citizens Ambassadors program. Sue will show a video of her professional and cultural experiences, and discuss microscopy in China.

Important Details: The cost to ride the bus is \$5.00 and you will be responsible for your dinner at the brew pub. Reservations must be made by Thursday, October 23 to Jeff Payne (612-733-2352, jjpayne@mmm.com). If you have any questions, direct those to Jeff also.

Directions to the Mall of America Transit Station: Park in the East Parking Ramp of the Mall of America. Take the elevator or stairs all the way down to the Transit Station. Go out into the bus lanes area and follow the curb on the left to the purple pillars.

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November 1997 Meeting

**Atomic Force Microscopy and Related Techniques:
Introduction, Instrumentation and Application to Polymeric Materials**

Inga Holl Musselman

Assistant Professor of Chemistry, University of Texas, Dallas

November 20, 1997, Thursday

University of Minnesota, St. Paul Campus
Student Center, The Pendergast Room

PROGRAM

5:30 - 6:00 Social with Appetizers
Cheese - Crackers - Hot Apple Cider

6:00 - 7:00 Dinner Buffet
Broiled Salmon Fillet
Stir Fry Vegetable Blend - Au Gratin Potatoes
Orange Almond Salad with Poppyseed Dressing
Coffee, Tea, Milk - Dessert

7:00 - 8:00 Presentation, Inga Holl Musselman

ABSTRACT

Atomic force microscopy (AFM) was introduced by Binnig, Quate and Gerber in 1986. In this method, a sample is scanned beneath a small probe attached to the apex of a flexible cantilever. Cantilever deflection is measured to give height information corresponding to the sample topography. Since AFM relies on tip-sample force interaction, the technique can be applied to insulators as well as to conducting and semiconducting materials. AFM therefore extends local probe studies to an important class of materials which can be difficult to investigate by electron microscopy and spectroscopy techniques owing to problems with sample charging.

During the past decade, related force microscopy methods have been developed to facilitate the study of surfaces in a variety of environments using a number of contrast mechanisms. Among others, these methods include contact, non-contact and TappingMode atomic force microscopy, lateral force microscopy, force modulation, phase imaging, electrostatic force microscopy, magnetic force microscopy, scanning capacitance microscopy, scanning near-field optical microscopy, and scanning near-field thermal microscopy. This presentation will review the theory and instrumentation for some of these microscopy methods and will emphasize their application to polymer materials.

Biography: Inga Holl Musselman is an Assistant Professor of Chemistry at the University of Texas at Dallas. She received a Ph.D. in Analytical Chemistry in 1988 from the University of North Carolina at Chapel Hill. Her Ph.D. research project, concerning molecular and quantitative aspects of laser microprobe mass spectrometry (LAMMS), was conducted at the National Institute of Standards and Technology. During a postdoc in the Department of Materials Science and Engineering and Precision Engineering Center at North Carolina State

University, her research efforts concerned the fabrication of controlled geometry tips for scanning tunneling microscopy (STM) (patent and license awarded). In collaboration with Hoechst Celanese, she also investigated the application of scanned probe techniques to the characterization of polymer surfaces. Currently, Dr. Musselman's research group is investigating the fundamentals of STM image contrast. In addition, they are using atomic force microscopy and other microscopy methods to characterize the microstructure of synthetic and biopolymers including gas separation membranes and paired helical filaments from Alzheimers diseased brains.

PLEASE MAKE RESERVATIONS by November 18th. Contact: Gib Ahlstrand at (612)625-8249, 625-9728FAX, or: giba@puccini.crl.umn.edu.

Dinner and Social Hour: \$10.00 per person, payable at the door. Free for current student members or with new student membership, payable at the door. Presentation is free for those who come later for the talk only.

Social hour, dinner and the presentation will all be held in the Pendergast Room, second floor level of the St. Paul Campus Dining Center (across hall from Cherrywood Room) of the University of Minnesota. This location will be familiar to some who have attended our meetings there before. Parking is available in the lots indicated with cross-hatching below:

Directions: From I-94, take I-280 a few miles north and exit onto Larpenteur Ave., go eastbound 1 mile to Cleveland Ave. plus 1 block to Gortner Ave. From I-35W or Hiway 36 take Cleveland Ave. south to Larpenteur, turn left go 1 block to Gortner Ave.

Turn right onto Gortner and go south to Buford Ave., turn right , go 1 block to Buford Circle, turn right and proceed 1 block to parking lots (see map). Enter Dining Center as indicated.

MMS Projected Program 97/98

October 30, 1997 Mayo Clinic tour	Chartered bus will leave from Twin Cities area, \$5.00 fare. Tour includes clinic tour, EM area, and demo by the biomedical imaging resource.
November 20, 1997 University of Minnesota, St. Paul Campus	Atomic Force Microscopy & Related Techniques: Introduction, Instrumentation & Application to Polymeric Materials Inga Holl Musselman, Assistant Professor of Chemistry, University of Texas, Dallas
February, 1998	Possible talk by member of MSA Planning Committee, which will be meeting in Mpls.
March, 1998	Annual joint meeting with ASM.
May 5, 1998	Spring Symposium. Topic: Microscopy of Biomaterials. At the Midway Sheraton.

Announcements

Experienced Microscopy Technician.

Available for part-time or short-term projects. Some equipment provided. For details, contact Rae Vigeant (612)774-3593

Your Address Label Reflects Dues Date

The box on your MMS newsletter address label now contains the last recorded date - month/year - for which you paid membership dues to MMS. If the box is blank, either we have no record of any dues payment or dues have expired long ago. If the date indicated is more than 1 year before the current month or the box is blank, your membership is expired and, hopefully, you will be moved to renew using the form at the end of this newsletter. Thank you!

Adult Education and MMS

MMS would like to assist its members in furthering their continuing education goals. We are exploring the possibility of conducting 1-day workshops and would like to solicit ideas for topics from our membership. We would work together with a university or college to certify credits that could be applied by attendees toward continuing education goals. Contact MMS program directors Mark Cavaleri or Mike Coscio (see Board listings below) with your ideas and suggestions

MMS web site: <http://www.charfac.umn.edu/>

MnMicSoc.html. Check it out for local and national society stuff, hot links to other sites, information, etc.

FOR SALE:

Three Bausch and Lomb partial brass microscopes. Two with wooden boxes. Prices range from \$150.00 to \$450.00. One all brass miniature microscope with three lenses that screw together to obtain three magnifications, Wooden box included, with special glass slides. \$100.00. Must see to appreciate. Ron Youngquist, 1436 E. Idaho Ave., St. Paul, MN 55106, 776-5790, young075@tc.umn.edu.

Attention Vendors: MMS Sponsorships

In addition to corporate membership in MMS, vendors have other opportunities to help sponsor MMS events. At meetings we often have *wine & cheese socials, coffee breaks and meals*. Contributions made toward supporting these events will be acknowledged by placards and announcements at the meeting, and in print in our newsletter. To discuss this option for any MMS meeting, contact MMS Vendor Liaison Diana Kittleson at: (612)917-5859, 917-5850 FAX, dkittleson@pillsbury.com

ATTENTION UNDERGRADUATES:

1998 MSA UNDERGRADUATE SCHOLARSHIP PROGRAM

This scholarship program is open to Junior and Senior college and university students interested in doing research using ANY microscopy technique as the principal investigative tool. Awards of up to \$2,500 per student/proposal are available. Students should be sponsored by a member of MSA. Submit an application and brief research proposal by December 30, 1997. Do you know of any undergrads in science to interest in electron microscopy? Act now.

Applications can be obtained from the MSA Business Office at (800)538-3672 or FAX:(508)548-9053 or e-mail: BusinessOffice@MSA.Microscopy.com.

Additional information and application forms are available from Dr. Ralph Albrecht, Dept. of Veterinary Science, University of Wisconsin, Madison, WI 53706. (608)263-3952 or -4162,

FAX:(608)262-7420.

Microscopy & Microanalysis '98

Atlanta, GA

July 12-16, 1998

Note Important Change!! In 1998, Microscopy & Microanalysis will be held a month earlier than has been the custom, due to the meeting of ICEM in Cancun, Mexico, in August, 1998. Abstracts for M&M '98 will also be due a month earlier, by **February 1**, 1998. For more information, contact: MSA Business Office, 4 Barlows Landing Rd., Pocasset, MA 02559. (508)563-1155, FAX (508)563-1211, 1-800-538-3672, e-mail: BusinessOffice@MSA.Microscopy.com

Project MICRO

Project MICRO: The Microscopy Society of America, in collaboration with Project MICRO (Microscopy In Curriculum - Research Outreach) and local societies like MMS, is putting MSA members into middle schools nationwide to teach microscopy. The program manual is part of the outstanding Great Explorations in Math and Science (GEMS) series of the Lawrence Hall of Science(<http://www.lhs.berkeley.edu/GEMS/html>).

Project Micro Contacts are:

Rodney Rappe, (612)704-3564, RGRappe@Imation.com,

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For more information, check Project MICRO web site at: <http://www.msa.microscopy.com/ProjectMicro/>
