
Minnesota Microscopy Society

Local affiliate of the *Microscopy Society of America*
and the *Microbeam Analysis Society*



Newsletter

September 2007

MMS 40th Anniversary Party

Thursday, September 13, 2007

Come help the Minnesota Microscopy celebrate its 40th anniversary at the Minnesota History Center, with talks highlighting the past and looking to the future.

Location

Minnesota History Center
345 Kellogg Blvd. W.
St. Paul, MN 55102-1903

Schedule

5:30 - 6:30 Registration and Social Hour
6:30 - 7:30 Dinner
7:30 - 9:00 Talks by Nestor Zaluzec and Dick Zeyen.

Dinner: Dinner will be chicken or a vegetarian option. Please specify your choice when making your reservation. For dessert, there will be a special MMS anniversary cake.

Registration

The cost of the meeting will be \$30 for MMS members and \$15 for students. Reservations **MUST** be made by the end of the day on **Tuesday, September 4th**. Register by e-mailing Bede Willenbring at reservations@mnmicroscopy.org. Include whether you want the chicken or the vegetarian meal.

Speakers

Dr. Nestor Zaluzec - Argonne National Laboratory
“Is there an Electron Optical Beam Line in your Future?”

It is becoming increasingly apparent that the state-of-the-art instrument we previously described as an electron microscope is rapidly evolving away from the tool we all became comfortable with during the last forty years of the EM field. Thirty years ago, we talked about interfacing new analytical technologies to microscopes and argued the merits of instruments with what today now seem like unremarkable capabilities. Certainly a great number of the developments in the last three decades are now routinely available in off-the-shelf microscopes and we take this for granted. However, the most advanced versions of these tools are far from routine microscopes. These research tools cost as much as a modern beam line at synchrotron sources, and require environmental conditions which in many cases exceed that for those sources.

We can identify at least five challenges for electron-optical beam lines which are on the verge of achievement, these are:

- 1) Ultra-high resolution
- 2) Ultra-high convergence/collection angles and large gap
- 3) In-situ EM Fields
- 4) Ultra-high Speed
- 5) In-situ Gases/Liquids

(Cont. on page 2)

(Zaluzec cont.)

Each of these challenges requires an optimized beam line and provide some unique opportunities for new and exciting science. For example, the potential for an ultra high convergence instrument with large gaps will allow us to realize a configuration of a beam line that can best be called a scanning confocal electron microscope. This as well as other potential opportunities will be discussed.

Biography: Nestor J. Zaluzec

PhD, Metallurgical Engineering, University of Illinois at Urbana-Champaign, 1978

A principle investigator in the Electron Microscopy Center at Argonne National Laboratory as well as a Fellow of both Oak Ridge National Laboratory and the Computational Institute of the University of Chicago, His research includes the development of state-of-the-art instrumentation and techniques for atomic resolution x-ray and electron spectroscopy, magnetic imaging, and the invention of the scanning confocal electron microscope.

In addition to creating tools for science, he also uses these leading-edge technologies to study vexing problems in technologically important materials. His work over the last quarter of a century has included studies in the areas of structural phase transformation in metals, radiation damage in alloys, ceramic oxides for geologic immobilization of nuclear waste materials, elemental segregation in semiconductor devices, and genetically engineered proteins for creation of two-dimensional templates for bio-materials nanoarrays.

He was one of the earliest to realize the potential impact of the Internet on science and established the first TelePresence Microscopy Collaboratory, which has served as a model for outreach to both the scientific and education communities, providing unencumbered access to scientific resources.

Prof. Richard Zeyen - University of Minnesota;
Dept. of Plant Pathology
“The Genesis of MMS”

Dick Zeyen was one of the original members of the Minnesota Microscopy Society and he will be talking about the early days of the MMS and how the organization came to be.

Dick teaches and does research in the Department of Plant Pathology at the University of Minnesota. His research focuses on trying to understand the biochemical and molecular basis of genetically conditioned disease resistance in plants, and to use this information to genetically engineer more "durable" disease resistance in cereals.

Project MICRO



Twelve year-old Marie Schroeder got her Christmas wish through the MMS's Project MICRO – to operate an electron microscope. Here she is at the University of Minnesota operating a TEM, investigating the structure of a kidney.

Minnesota Microscopy Society - Sigma Zeta Joint October Meeting

“The Uncanny Physics of Superhero Comic Books”

Date: Tuesday, October 23, 2007

Location: Bethel University
Eastlund Room, Community Life Center
3900 Bethel Drive, St. Paul, MN 55112

Map: http://www.bethel.edu/special-events/campus_map.htm

Program:

- 4:30 - 5:30 Registration and Social Hour
5:30 - 6:30 Dinner
Hunters Chicken: Whole chicken braised with mushrooms, roasted garlic, fresh herbs and tomatoes, wild rice pilaf and green beans.
Dessert.
6:30 - 6:45 Sigma Zeta meeting
6:45 - 7:00 MMS Presentation: What is MMS?
7:00 - 8:00 Talk

Registration:

The cost of the meeting will be \$25 for regular MMS members and \$12 for student members. Reservations **MUST** be made no later than **Wednesday, October 17th**. Register by e-mailing Bede Willenbring at reservations@mnmicroscopy.org.

Up-Coming MMS Meetings

November Meeting

November 15th - Thursday
Tour of Imation

MinnTS Meeting

March 20th, 2008 - Thursday
Hubble Telescope

Spring Symposium

May 2nd, 2008 - Friday
Science Museum of Minnesota

Speaker

Prof. James Kakalios - University of Minnesota, School of Physics & Astronomy
“The Uncanny Physics of Superhero Comic Books”
A look inside the amazing – and often surprisingly accurate – physics behind the powers of your favorite superheroes. If superheroes stepped off the comic book pages or silver screen and into reality, could they actually work their wonders in a world constrained by the laws of physics? How strong would Superman have to be to “leap tall buildings in a single bound”? Could Storm of the X-Men possibly control the weather? And, how many cheeseburgers would Flash need to eat to be able to run at supersonic speeds?

Biography: James Kakalios received his Ph.D. in Physics from the University of Chicago in 1985, and has been reading comic books for much longer. After a post-doc at the Xerox-Palo Alto Research Center, he tired of those California winters and joined the physics faculty at the University of Minnesota in 1988, where he has been ever since. His research involves experimental condensed matter physics, in particular the properties of disordered systems, from amorphous silicon to granular media to voltage fluctuations recorded in the brain. In 2001 James created a Freshman Seminar at the University of Minnesota, entitled “Everything I Know About Physics I Learned from Reading Comic Books,” which led to his writing a popular science general audience book The Physics of Superheroes.



Sustaining Members

Sustaining members are the backbone of financial support for the Society. These members make it possible for the Society to support Project Micro and to cover many expenses of the regular meetings and the Spring Symposium. We greatly appreciate the continued support of these individuals and corporations. To become a Sustaining Member, complete and return the MMS membership form at the end of the newsletter.

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If any Sustaining Members are missing from this list, *please* contact either: Jason Heffelfinger (763-514-1021, jason.r.heffelfinger@medtronic.com) or Peter McSwiggen (612-781-2282, PMcS@McSwiggen.com).

MMS Patron Members

The Minnesota Microscopy Society would like to express sincere thanks to our Patron Members. These members provide financial support to the organization above the standard membership fee. This additional support makes it possible for MMS to maintain its financial well being. To become a Patron Member, complete and return the MMS membership form at the end of the newsletter.

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Minnesota Microscopy Society – Membership Form

All microscopists are urged to support their Society at one of the membership levels offered below. The more dues-paying members we have, the more likely we are to attract sustaining corporate memberships which form the financial backbone of our Society. Often, supervisors will support MMS memberships out of their project budget because they recognize that it is a very inexpensive way to maintain and increase the skills of their microscopists. If you have been a member over the years and recognize the value of MMS to the community of microscopists it serves, consider upgrading your membership this year to the patron or sustaining level. Thank you.

Name _____ Dr _____ Mr _____ Ms _____ Phone (_____) _____

Affiliation _____ Position _____

Address _____ ZIP _____

E-mail address _____

Indicate the method by which you would like to receive the Newsletter: e-mail/web _____ mail _____

Check here _____ if you do NOT want your name and address to appear in the Society directory.

Are you an MSA member? _____ MAS Member? _____ Other Professional groups? _____

Student (\$5) _____ Basic (\$10-\$24) _____ Patron (\$25-\$99) _____ Corporate Sustaining (\$100-) _____

Payment: _____ Check _____ Visa _____ Mastercard _____ American Express _____ Discover _____

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Signature (for credit card payment): _____

Make checks payable to MMS and mail to our Treasurer:

Bede Willenbring, MMS Treasurer, 4763 Decatur Ave. North, New Hope, MN 55428-4402

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