

Minnesota Microscopy Society Newsletter



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

MMS April 1997 NEWSLETTER

7th ANNUAL METALLOGRAPHIC EVENT

MMS Joint meeting with ASM (American Society of Metals)

OPTICAL INTERFEROMETRY AND ITS APPLICATION TO SURFACE ANALYSIS

Speaker: Don Zipperian

Thursday, April 23, 1998

**Campus Club, West Wing Room
University of Minnesota, East Campus**

The metallographic event is intended to be a fun and educational way for you to share your metallographic work and learn from other's experiences (**Note:** Meeting location is **NOT** the VFW hall this year).

The speaker is **Don Zipperian** from the Measurement Division of Veeco Instruments (formerly Wyko). Don has a PhD in Materials Science from the University of Arizona at Tucson. Prior to joining Veeco, he was assistant director of research at Buehler LTD and process development engineer at Seagate Technology.

The focus of the presentation will be to discuss the technology of **Phase-shifting Interferometry (PSI)** and **Vertical Scanning Interferometry (VSI)** along with its application to measuring 3-D surface features. Optical Interferometry has found applications in the semiconductor, hard disk storage, fiber optics, automotive, paper, film, printing, materials analysis and metallurgy, and printed circuit board industries. Vertical resolutions of 2-3 Angstroms can be obtained with excellent gage repeatability along with very fast measurement capabilities.

SCHEDULE

5:30 - 6:30 Poster set-up & social hour

6:30 - 7:30 Dinner

7:30 - later Speaker

Dinner Reservations: Contact Mike Coscio at (612)514-1331, Email: mike.coscio@medtronic.com

Cost: \$10 members (\$20, non-members). Student's dinner is sponsored and is free only for current student members (\$5).

Directions: The Campus Club is in the [Coffman Memorial Union](#) , 300 Washington Ave. SE, Mpls. East Campus of UM. From I-280 take University Ave. exit, go westbound on University Ave. to Washington Ave. (left turn), go on Washington to parking ramps near the Radisson Metrodome Hotel. Coffman Union is just a block further west from the ramp.

Spring Symposium

Microscopy of Biomaterials

SHERATON INN, MIDWAY
I-94 at HAMLIN AVENUE
ST. PAUL, MN

TUESDAY MAY 5, 1998

Schedule Of Events

8:00-9:00	Coffee and Late Registration Vendor Displays, MSA Traveling Posters
9:00-9:45	MICROSCOPY OF BIOMATERIALS: AN OVERVIEW Patrick Parks, 3M BioMaterials Technology Center.
9:45-10:30	CHARACTERIZING ALIGNMENT IN TYPE I COLLAGEN GELS Ted Tower, Dept. Chemical Engineering & Materials Science, University of Minnesota
10:30-11:15	Coffee Break Vendor Displays, MSA Traveling Posters
11:15-12:00	THE APPLICATION OF CORRELATIVE MICROSCOPY TO THE STUDY OF BIOLOGICAL-BIOMATERIAL INTERACTIONS Ralph Albrecht, University of Wisconsin, Madison
12:00-1:00	LUNCH Vendor Displays, MSA Traveling Posters A buffet lunch will be served at the Sheraton Inn
1:00-1:15	MMS Business Meeting Election of Officers
1:15-2:00	STRUCTURE OF TEETH Professor William Douglas,

	Director of the Dental Research Center for Biomaterials and Biomechanics, University of Minnesota.
2:00-2:45	Coffee Break Vendor Displays, MSA Traveling Posters
2:45-3:30	CELLULAR PERFORMANCE OF BIOMATERIALS: A MACROSCOPIC AND MICROSCOPIC ASSESSMENT Maura Donovan, Center for the Biomaterials Research, Medtronic, Inc.
3:30-4:30	Vendor Displays, MSA Traveling Posters

Symposium Registration: Important!! To reserve your spot, please contact Mike Coscio at (612)569-1331, E-mail: mike.coscio@medtronic.com

We must have an advance head count for this event.

Symposium Fee: \$25.00 current regular MMS members 97/98 (dues paid since 9/1/97), \$35 non-member (confers regular membership), \$10.00 student members 97/98 (dues paid since 9/1/97) \$15.00 non-member students (confers student membership). Fees payable at the door.

Vendors: Vendors of microscopy and related equipment will be present at the Symposium. If your company would like to have table space for product display, please contact **Symposium Vendor Liaison: Diana Kittleson** at Pillsbury Technology East, 737 Pelham Blvd., St. Paul, MN 55114 (612)917-5859, Fax(612)917-5850, or e-mail dkittleson@pillsbury.com

SPEAKERS & ABSTRACTS

Patrick Parks. Because the biological reaction to a biomaterial takes place on or in the biomaterial itself, visualization of the reaction is mandatory. While laboratory tests may reflect biological processes it is the microscopic examination of the biomaterial that gives definitive information on the interface. Clinical biomaterials can be divided into separate categories based on their site of use; orthopaedic, soft tissue and blood. We will consider the role of various visualization techniques in describing the interaction of the body with the biomaterial in each of these settings.

Maura Donovan. A current focus at Medtronic is applying advances in cell and molecular biology to biomaterials research. In particular, effort within Medtronic's Center for Biomaterials Research (CBR) is directed towards understanding and modulating events occurring at the interface between implanted materials and the host organism. An overview of Medtronic's cell and molecular biology research program will be presented, along with a more specific description of research done in our laboratory to evaluate the pro-inflammatory potential of implanted materials.

Maura Donovan received a B.A. in Chemistry and Russian from Macalester College and a Ph.D. in Pharmacology from the University of Washington. Prior to coming to Medtronic Maura, was a postdoctoral fellow in the Department of Biochemistry at the University of Minnesota. She has been at Medtronic for 7 years conducting research in the general area of vascular biology.

Ted Tower. Structure plays an important role in the functionality of bioartificial soft tissues comprising of cells entrapped in a reconstituted type I collagen gel (a.k.a. tissue equivalents), and this research has explored methods to characterize the alignment of the network of collagen fibrils. Working towards a comprehensive description of collagen gel alignment has utilized methods that can detect the orientation of the collagen fibrils

that make up the network, whether visually (confocal laser scanning microscopy and transmission electron microscopy) or through optic properties (measurement of birefringence). The imaging of collagen gels by different methods has helped elucidate the spatial variation of alignment and effects due to surfaces, a high strength magnetic field, and sample orientation during gelation. A continuing goal is to characterize the dependence of this alignment on length scales relevant for tissue engineering applications (from microns to millimeters). An automated method to determine a sample birefringence map is presented which can accommodate a wide range of length scales (tens of microns to millimeters), and allows for time-lapse study of alignment development. These tools hold great potential to expand our knowledge of how collagen alignment guides cell movement and influences tissue growth. The application to improved nerve regeneration is briefly described.

Ted Tower received his B.S.E. from the University of Michigan in 1994. Currently, he is in his 4th year of graduate research in Prof. Robert Tranquillo's research lab in the Chemical Engineering & Materials Science Department at the University of Minnesota.

William Douglas. TBA.

Ralph Albrecht. TBA.

MMS PROJECT MICRO MEETING

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,

Stuart McKernan, (612) 626-7942, 626-7530 FAX, stuartm@maroon.tc.umn.edu.

Tina Schwach, (612) 681-0112H, 624-1295W, schwa044@maroon.tc.umn.edu

Ev Osten, (612) 736-0104, 733-0648 FAX, efosten@mmm.com,

Caroline Schooley, MSA Educational Outreach Coordinator, Box 117, Caspar, CA 95420. e-mail: schooley@mcn.org. Phone/FAX(707)964-9460.

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

MMS Membership directory

MMS has plans to put out a membership directory available to all members and other friends of the Society. To have your name, address, affiliation, phone number, e-mail address, web site or whatever in the directory,

please contact Stuart McKernan at (612)626-7942, 626-7530 FAX, or by e-mail at: stuartm@tc.umn.edu. If you have already contributed your membership information for 1997/98, we have your current information.

MMS Notices and Announcements

Experienced Microscopy Technician.

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

Wanted: ENGINEERING MANAGER

Kovex Corp., a rapidly growing high-tech manufacturer of surface inspection equipment is seeking a hands-on goal orientated technical leader to manage small multidisciplinary development teams. Primary responsibility is to ensure that goals and objectives of technical plans are met within prescribed time frames and funding parameters. The ideal candidate will have: development experience in surface inspection instrumentation; ability to lead a multidisciplinary product development team from concept to production.

Requirements: minimum 5 years experience + an MS or equivalent with a broad technical background, preferably with an emphasis in optics and confocal microscopy.

Send resume with salary requirements: Attn.: Mary Huber, 3711 Lexington Avenue N., Shoreview, MN. 55126, FAX (612)486-9785. EOE

MMS Communications Available Electronically via WEB and E-mail

If you are interested in getting your quarterly newsletters and other announcements from MMS electronically, we strongly encourage those who are technologically enabled to begin accessing the MMS Newsletter via our web site (*you are here*) and to subscribe to other flyers and announcements via e-mail. As a reminder, an e-mail notice would be sent out to all electronic subscribers when each new newsletter is posted on our web site. Other short meeting announcements will be sent out by e-mail in addition to being posted on our web site. However, hard copy newsletters and announcements via U.S. Postal Service will continue to be available for those who have no web access or prefer to get hard copy mailings. Finally, if you have no interest in remaining on our mailing list, please also indicate that choice.

Communicate your preferences to MMS Newsletter Editor Gib Ahlstrand:

E-mail: giba@puccini.crl.umn.edu

Phone: (612)625-8249 or use the [form](#) below

MMS WWW Site: <http://www.charfac.umn.edu/MnMicSoc.html>

All microscopists, vendors and other interested parties are invited to check out these MMS WWW pages on a regular basis to see the current and past newsletters, MMS information, links to other microscopy sites, including MSA and MAS. If you have any contributions for the site or ideas to make it even more useful, contact the web site manager Stuart McKernan via the link below.

Microscopy & Microanalysis '98

July 12-16, 1998

Atlanta, Georgia

"Microscopy & Microanalysis 98" - a joint meeting of the Microscopy Society of America and the Microbeam Analysis Society, will be held in Atlanta this year.

For information and registration materials, contact **MSA Meeting Manager**, The Rebedeau Group, 1-708-361-6000, MSA@tradeshownet.com, or the Web site at: <http://www.MSA.Microscopy.Com>.

The booklet contains all the information and forms needed to register in advance for the Meeting, submit papers for presentation, order reprints, apply for scholarships, reserve hotel rooms, and enter the micrograph competition.

Newsletter Contribution Welcome

Do you have something to say about EM, a new technique, a book you've read that you want to review, a report on an EM meeting or workshop you've attended, or...what? Write it up and send it in on a 3.25 inch disk in Word 5 or 6 for Macintosh. Other text formats are acceptable, or you can e-mail it to: giba@puccini.crl.umn.edu. Disks will be returned. Send your stuff to newsletter editor Gib Ahlstrand at the address given on the [Board Directory page](#).

NOTE: To all of our readers: If you are interested in getting your quarterly newsletters and other announcements from MMS electronically, we strongly encourage those who are technologically enabled to begin accessing the MMS Newsletter via our web site (see top of this sheet) and to subscribe to other flyers and announcements via e-mail. As a reminder, an e-mail notice would be sent out to all web site viewers when each new newsletter is posted on our web site. Other short meeting announcements will be sent out by e-mail in addition to being posted on our web site. However, hard copy announcements via U.S. Postal Service will continue to be available for those who have no web access or prefer to get hard copy mailings. Finally, if you have no interest in remaining on our mailing list, please also indicate that choice. **Communicate your preferences to MMS Newsletter Editor Gib Ahlstrand:**

Gib Ahlstrand: e-mail: giba@puccini.crl.umn.edu phone: (612)625-8249

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- Notices, announcements via E-mail. E-mail address:
- Newsletter via MMS web site. (also give e-mail address above).
- Send my newsletter and announcements by U.S. Postal Service, as before.

Remove my name from MMS mailing list.
