

# Minnesota Microscopy Society Newsletter



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

**MMS April 1997 NEWSLETTER**

## **MMS SPRING SYMPOSIUM**

### **Investigative Microscopy**

**SHERATON INN, MIDWAY**

**I-94 at HAMLINE AVENUE  
ST. PAUL, MN**

**TUESDAY - MAY 20, 1997**

#### **SCHEDULE OF EVENTS**

**8:00 - 9:00 AM  
Coffee and Late Registration**

**9:00 - 9:45**  
*Skip Palenik:* **MICROSCOPIC TRACE EVIDENCE:  
THE OVERLOOKED CLUE**

**9:45 - 10:30**  
*Kathryn Malody:* **ETHNOBOTANICAL ANALYSIS OF  
REMAINS ON LAKE WINNIBIGOSHISH**

**10:30 - 11:15  
\ Coffee Break \  
Vendor Displays**

**11:15- 12:00**  
*Peter McSwiggen:* **ELECTRON MICROPROMBES:  
AN ANALYTICAL TOOL FOR GEOLOGY, MATERIAL SCIENCE AND EVEN DENTISTRY**

**12:00 - 1:00 PM**

**LUNCH**

A buffet lunch will be served at the Sheraton Inn  
**Vendor Displays**

**1:00 - 1:15 PM**

**MMS Business Meeting  
Election of Officers**

**1:15 - 2:00 PM**

*Larry Hanke:* FORENSIC MICROSCOPY IN MATERIALS SCIENCE

**2:00 - 2:45**

**\ Coffee Break \  
Vendor Displays**

**2:45 - 3:30**

*Mike Finnegan:* THE INS AND OUTS OF FORENSIC ANTHROPOLOGY

**3:30 - 4:30**

**Vendor Displays**

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Mail the form at the end of the newsletter with your check **POSTMARKED NO LATER THAN FRIDAY, MAY 16**, if you plan to attend the Symposium (preferred, or pay at the door).

**Symposium Fee:**

- \$25.00 current regular MMS members 96/97 (dues paid since 9/1/96),
- \$35.00 non-member (confers regular membership),
- \$10.00 student members 96/97 (dues paid since 9/1/96)
- \$15.00 non-member students (confers student membership).

**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 TPC Labs, 330 University Ave. S. E., Minneapolis, MN 55414,

Phone: (612)330-1898 Fax: (612)330-8266

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**SPEAKERS & ABSTRACTS**

**Michael Finnegan** holds a Ph.D, D-ABFA. Professor and Coordinator of Anthropology at Kansas State University and a consultant in Forensic Anthropology.

*Forensic anthropology: relevance to law enforcement and historical inquiry.*

Dr. Finnegan's one-hour presentation will acquaint you with an overall view of the contribution of forensic anthropologists in matters relevant to the broader discipline physical anthropology. The areas he will discuss include the identification of military MIAs, assisting the law enforcement community, the role of mtDNA in the identification process. Examples of basic identification methodology, application of techniques, and a few case

studies will illustrate (with humor) a number of identification problems: skeletal remains, difficult crime scene investigation, search and rescue operations, facial reconstructions and the exhumation and analysis of historic figures (i.e. Jesse James).

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**Kathryn Malody**, Hamline University, Laboratory Manager for the Hamline Biology Department.

*Ethnobotanical Analysis of Remains from Two Early Blackduck Sites On Lake Winnibigoshish: South Richards Townsite and North Sugar Lake*

This project evaluated subsistence based land use and plant community patterns in the past (1000 years ago) and present using the combined approaches of archeological excavation, paleobotanical analysis, informant interviewing, microscopy, and modern plant community survey (releve). Wild rice as well as other potential food plants were identified from the flotation recovered samples. Wood and seeds recovered combined with the releve data allowed for the analysis of plant community changes over time due to human activity as well as natural hydrologic processes.

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**Larry D. Hanke, P.E.**, Materials Evaluation and Engineering, Inc., Plymouth, MN

*Forensic Microscopy In Materials Science*

How did this break? Was it made correctly? Why did that corrode? How was this made? These are common questions raised in materials laboratories for forensic investigations in criminal or product liability cases and for materials-related industries. Finding the answers almost always involves investigative microscopy. Failure analysis, product development, and quality control in materials laboratories rely heavily on specialized microscopic techniques, such as metallography, fractography, and various microanalysis methods. This presentation will describe and illustrate several microscopic techniques used in the forensic materials laboratory, including light microscopy, scanning electron microscopy, Auger electron spectroscopy, and microscopic Fourier transform infra-red spectroscopy. Examples will be presented to demonstrate the use of investigative microscopies in forensic analysis of metallic and nonmetallic devices and components.

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**Peter McSwiggen**, Dept. of Geology and Geophysics, Minnesota Geological Survey, University of Minnesota. Manager, Electron Microprobe Laboratory.

*Electron Microprobes: An analytical tool for geology, material science and even dentistry.*

An electron microprobe differs from a scanning electron microscope in its capacity to detect and differentiate X-rays based on their wavelengths. Wavelength Dispersive spectrometers (WDS) have many advantages over the energy dispersive spectrometers (EDS) found on scanning electron microscopes. They have a 15 times better resolution for differentiating X-ray peaks. They are better at light element detection, and they have a better peak to background ratio for detecting minor elements (10 to 50 times better).

The Electron Microprobe Laboratory at the Department of Geology and Geophysics of the University of Minnesota has been involved in a variety of research problems that have involved the chemical characterization of microscopic materials. These have included geologic studies related to mineral exploration, characterization and development. They have also included those that are more material science oriented including the oxidation

and diffusion in metals, chemical characterization of optical fibers, element distribution in foam and rubber, and even the development of cavities in teeth.

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**Skip Palenik**, Microtrace, Inc.

*Microscopic Trace Evidence: The Overlooked Clue*

Because of national and local news coverage it is difficult not to be aware of the role of trace evidence in many court proceedings. Often the evidence appears to be overwhelming as reported but clearly not conclusive based on the court decisions. This talk will present a number of case histories which hinged on the identification and analysis of microtraces of materials. The case histories will be used to illustrate the procedure, possibilities, and pitfalls in such work.

Skip began his career as a microscopist at McCrone Research Institute (MRI) where he continues to teach microscopy course. Skip is currently a self-employed independent microscopist. He works as an expert witness and scientific consultant in the area of forensic microscopy which takes him literally around the world. He has worked in such interesting cases as the Wayne Williams (Atlanta Child Murder) case and is currently working on the Profit serial murder case of prostitutes being tried here in the Twin Cities.

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## MMS PROJECT MICRO at BELL MUSEUM

**May 3, 1997 (Saturday)**  
**U. of MN, East Bank Campus**

The Bell Museum of Natural History (on the East Bank of the Minneapolis Campus) is having a Science Fest on Saturday May 3rd. from 10:00 am to 2:00 PM. The Minnesota Microscopy Society will have the Project Micro "Microworld" Festival" there. We will set up about 6 stations (of the 10 we have assembled for the festival) in the room that they have allocated for us. At the last-but-one meeting the Society demonstrated the MicroWorld Festival for members, now it is time to run it for real. This is an excellent opportunity for the Society to encourage and inspire a future generation of potential scientists, as well as being great fun!.

*What we need now is volunteers.* There are opportunities to help set up from 8:00 A.M on Saturday. Then maybe 1 or 2 volunteers for each station - it is not necessary to sign up for the whole time that the Science Fest is running. And finally a couple of people to help pack it all up.

If you are interested in this project, Please contact **Stuart McKernan** by using his E-mail:  
[stuardm@tc.umn.edu](mailto:stuardm@tc.umn.edu), or Phone: (612) 626-7942  
or **Rod Rappe** by his E-mail: [RG\\_Rappe@mmm.com](mailto:RG_Rappe@mmm.com), Phone: (612) 704-3564

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## **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](mailto:stuartm@tc.umn.edu). If you have already contributed your membership information for 1996/97, we have your current information, but would appreciate your current e-mail and web site addresses.

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## **Wanted: MATERIALS ANALYST**

Western Digital is one of the most successful and fastest growing developers of hard disk storage in our industry. We are expanding our high performance drive team in Rochester, and are seeking a Material Analyst with responsibility for the microanalysis of components and materials in magnetic disk drives. This person will be a key member of the Tribology and Analytical Services Team. *Position #50275*

Requirements: BS, MS or PHD in Chemistry, Chemical Engineering, or Materials Science with 7+ years of experience; hands-on analyst with experience in SEM; analytical experience with GC/MS, FTIR, IC, ICP, TGA, XPS and/or AUGER also desirable. Failure analysis and problem solving based on analytical data required. Experience working in cross functional teams with design engineers, quality engineers, technical buyers and suppliers. Individual must have good communication skills and be a strong team player. Analysis experience in the disk drive industry would be a plus.

WESTERN DIGITAL, 1599 N Broadway, Rochester, MN 55906, 507 286-7778 (Jim Hemmerich), Fax 507 286-7586,  
E-Mail [hemmerich@WDROC.WDC.COM](mailto:hemmerich@WDROC.WDC.COM)

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**Experienced Microscopy Technician.** Available for part-time or short-term projects. Some equipment will be provided. For further details, please contact Rae Vigeant at (612)774-3593.

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## **MMS WWW Site**

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

All microscopists, vendors and other interested parties are invited to check out the MMS WWW page 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 site manager [Stuart McKernan](#) via the site or see his address in MMS Board Directory below.

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## **NEWSLETTER CONTRIBUTIONS 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 under the Board Directory near the end of this newsletter.

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### **Microscopy & Microanalysis '97**

**August 10-14, 1997**

**Cleveland, Ohio**

"*Microscopy & Microanalysis 97*" - a joint meeting of the Microscopy Society of America, the Microbeam Analysis Society, and the Histochemical Society will be held in Cleveland this year.

For information and registration materials, contact *MSA Business Office, 4 Barlows Landing Rd., Suite 8, Pocasset, MA 02559. 1-800-538-3672, [BusinessOffice@MSA.Microscopy.com](mailto:BusinessOffice@MSA.Microscopy.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.

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