

Milwaukee Chapter

Since 1919

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Capabilities of Modern Scanning Transmission Electron Microscopy

Paul Voyles (UW-Madison)

Event Sponsor:


Date: Tuesday | May 8, 2018

Time: 5:30 - Social | 6:00 - Dinner | 7:00 - Presentation

Location: Klemmers Banquet Center
10401 W. Oklahoma Ave., Milwaukee Wisconsin 53227

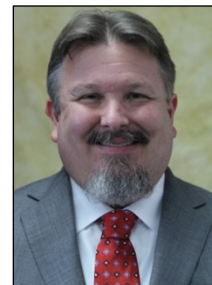
Cost: **\$25** Members and Nonmembers | **\$15** Retirees and Life Members
Free to Students, Members between jobs, Gold sustaining member reps and Meeting sponsor (2 attendees)

RSVP by: Friday | May 4
Register online at asm.milwaukee.org or contact Jim Schwaegler
jschwaegler@toolsinc.com | (262) 246.3400, Ext. 217

Technical Chair: Professor John H. Perepezko, UW-Madison
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What if we could know everything there was to know about the structure of a piece of material? Complete knowledge would constitute something like a list of all the 3D positions of all atoms, with the element of each atom specified, and measurement of all the electronic states at high resolution in real and momentum space. Modern electron microscopy cannot provide quite all of that information, but it can get surprisingly close. This talk will introduce the scanning transmission electron microscope instrument, then provide examples of cutting-edge applications measure atomic structure and defects and in a variety of materials and in various sample environments.

Paul Voyles is Professor and Chair of the Department of Materials Science and Engineering and Beckwith-Bascom Professor at the University of Wisconsin-Madison. He earned degrees in physics from Oberlin College and the University of Illinois, Urbana-Champaign, then worked as a post-doctoral member of technical staff at Bell Labs in Murray Hill NJ. He joined the UW-Madison in 2002 as an Assistant Professor. His research specialty is the structure of materials, investigated primarily with electron microscopy, supplemented by simulations and data science. He has worked in materials for microelectronics and spintronics, superconductors, and on metallic and other glasses. He co-leads the interdisciplinary research group Stability in Glasses in the UW-Madison NSF MRSEC. He has published over 150 journal articles, book chapters, and conference proceedings.



This event is also host to the Merrill A. Scheil Excellence in Metallography Contest. See accompanying information for details on how to participate.

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Merrill A. Scheil Excellence in Metallography Award

Each year, ASM-Milwaukee holds a metallography contest to honor the memory of Merrill A. Scheil. Merrill served with dedication and distinction as President of both the Milwaukee Chapter and the International Society. The contest is meant to demonstrate the high level of professional and technical talent within our chapter through ***the display of the metallurgical skills in metallographic preparation, photomicrography, and microstructural interpretation by the participants.***

Entry Rules

1. This contest is intended to highlight the use of metallography for microstructural interpretation. It is not intended to be a research poster competition. Therefore, a strong emphasis will be placed on a concise description of results. Content should be focused on a singular issue, analysis or topic.
2. An individual may submit more than one entry, provided they are of different content. A co-exhibitor may be listed on entries.
3. Make a careful selection of your best work, and be familiar with the system used by the judges in scoring each entry. Too many images or figures can be a distraction. Digitally captured images must depict true structures, which have not been significantly altered from their original appearance.
4. Only digital entries are allowed (physical entries are no longer accepted).
5. A single page PDF or PowerPoint format document file may be submitted for entry. No animations, sounds or video may be included. A standard aspect ratio of 4:3 will be used for evaluation and display.
6. Download, complete, save and submit a copy of the **Entry Form**, which can be obtained on the Metallography Contest page at asm-milwaukee.org/metallographycontest. The caption should include the name of the material or alloy, specimen preparation, characterization technique, magnification or scale bar on micrographs, and a **short** description of the purpose and significance of the results. Judges will have a limited and fixed time to read and evaluate the content of each entry.
7. No personal or affiliation identifying information should be displayed on the front of the entry. Your name, affiliation, and contact information should be listed on the **Entry Form**.
8. No prior notification is necessary to submit an entry. You do not need to be present at the meeting to win.
9. Submissions should be uploaded via the link on the Contest page by the close of business on Friday, May 4, 2018.

Judging

1. Originality of the project in relation to characterizing a material or process, solving a problem (20%)
2. Quality and uniqueness of the specimen preparation (20%)
3. Image quality including appropriate size and resolution for viewing (20%)
4. Concise presentation of content and results (20%)
5. Uniqueness of the presentation in an aesthetic and technical sense, manner of titles, and other descriptions (20%)

Awards

Awards and prizes will be given for Best-In-Show, 2nd Place Overall, 3rd Place Overall. Additional awards may be given at the discretion of the Technical Chair. The winning entries will be announced and recognized through the ASM Milwaukee Chapter website and communication. Content from the winning entry will be featured on the ASM Milwaukee website.