

John Mansfield Associate Research Scientist in Materials Science and  
Engineering Associate Director of the North Campus Electron  
Microbeam Analysis Laboratory



John Mansfield is an Associate Research Scientist in Materials Science and Engineering and the Associate Director and Manager of the North Campus Electron Microbeam Analysis Laboratory (EMAL), a University-wide user facility for the structural and chemical analysis of materials at nanometer length scales. He has been responsible for the laboratories and offices of the North Campus EMAL since his arrival at the University in 1987.

During his time at Michigan, Mansfield has been committed to the development of the North Campus EMAL into a world class state-of-the-art characterization facility that not only serves the campus community, but also supports a range of local industries and sister academic institutions in southeastern Michigan, northern Ohio and southwestern Ontario.

Under Mansfield's guidance, the North Campus EMAL facility has grown from a small transmission electron microscope facility with approximately two dozen users, predominantly from the Departments of Materials Science and Engineering and Chemical Engineering, to a nanoscale characterization laboratory, electron microscope and surface analysis facility that serves the majority of the departments in the College of Engineering and over a dozen other departments across the campus of the University. As Principal Investigator and Co-Principal Investigator, leading teams of up to 30 faculty, Mansfield has been responsible for the majority of the six new instruments (three electron microscopes, two focused ion beam systems and a x-ray photoelectron spectrometer) that have been acquired as the result of successful National Science Foundation Major Research Instrumentation Programs. There are now over 500 registered users of the North Campus EMAL and the laboratory supports faculty research programs that are worth over \$60M. The facility is now world-renowned and considered one of the premier such facilities by its peers.

Mansfield specializes in nanostructural and nanochemical analysis of materials via transmission electron microscopy, scanning transmission electron microscopy, scanning electron microscopy, X-ray energy dispersive spectroscopy, electron energy-loss spectroscopy and electron diffraction. He collaborates on dozens of research projects, performing advanced characterization of materials, providing essential training of users on the EMAL instrumentation, interpreting and evaluating data and training students to evaluate data.

Since the number of users of EMAL continues to grow, he has developed remote teaching and learning systems for training students in groups of 20 to 30 rather than the routine on-on-one training that has been the norm. He has expanded the remote operation of EMAL instrumentation for academic outreach (to K12 schools) and collaborative research. Mansfield has also recently become involved in focused ion beam nano-fabrication, sample preparation and the use of focused ion beam techniques in conjunction with the environmental SEM.

Mansfield is the author and co-author of over 90 refereed journal papers and numerous conference papers and invited presentations. He is active in the Microanalysis Society and Microscopy Society of America. He is currently Past-President of the Microanalysis Society and has served as a council member for both societies (MAS 1997-99 and MSA 2001-3). He is currently the Microanalysis Editor of the journal of Microscopy and Microanalysis. At Michigan, he has been a member of the Government Relations Advisory Committee (2005-present), is the chair of the Communications Advisory Committee (2005-present) and a member of the University Senate Assembly. He is also a member of the College of Engineering Safety Committee.