



## MICROSCOPY SOCIETY OF NORTHEASTERN OHIO, INC.

An affiliate society of the Microscopy Society of  
America and the Microanalysis Society



## MSNO WINTER MEETING

3:00 – 7:15 p.m., Wednesday, March 2nd, 2016  
Lorain County Community College  
Spitzer Conference Center, Grand Ballroom\*

<b>Registration and Tours</b>  <i>Spitzer Conference Center, Grand Ballroom</i>	3:00 – 4:30 PM	<i>Posters and networking Desich Center tours will leave from the ballroom ~ every 20 minutes</i>
<b>Welcoming Remarks</b>	4:30 - 4:45 PM	<i>Dr. Roy A. Church President Lorain County Community College</i>
<b>Presentation 1</b>  <b>Human Performance Applications for MEMS Sensors</b>	4:45 - 5:30 PM	<i>Matthew Apanius, Managing Director SMART Microsystems Ltd.</i>
<b>Dinner</b>	5:30 - 6:30 PM	
<b>Presentation 2</b>  <b>Basic Digital Imaging and Image Formats</b>	6:30 – 7:15 PM	<i>Prof. W. Gray (Jay) Jerome Department of Pathology, Vanderbilt University Medical Center MSA National Tour Speaker</i>

Please register online at <http://www.msneo.org/2016-winter-meeting-registration.html> by Friday, 2/26/15. Registration is \$20 for members, \$25 for non-members, \$5 for student members, \$10 for student non-members. *A limited number of onsite registrations are available for an additional \$15 cost.*

\* Free parking is available onsite. Use this address for mapping apps: 1005 North Abbe Road, Elyria, OH 44035. A campus map is available at:  
<http://www.lorainccc.edu/NR/rdonlyres/75D7E433-DBE1-4F4A-B17D-DA68A33D96F9/22301/LCCCCampusMap.pdf>

## **2016 MSNO Winter Meeting Program**

### **Human Performance Applications for MEMS Sensors**

*Matthew Apanius, Managing Director SMART Microsystems Ltd.*

The massive adoption of MEMS motion sensors has led to the emergence of applications for measuring various aspects of physical activities related to athletics and physical fitness. Improvements in cost, infrastructure, and data processing have enabled the development of compact, comprehensive sensor-based products. However, these systems do not address methodologies that measure sustainment at the limits of human performance and are not useful for predicting and influencing behavioral responses to physical or environmental stress. The human body is a dynamic system where common practices only capture a fraction of the data that exists. Real time measurements of physiological phenomena combined with physical motion can be captured in a laboratory setting. As this is also somewhat limiting, MEMS-based sensor solutions have the potential to enable numerous applications where both physiological and physical data are needed such as athletics, personal fitness, wellness, clinical care, and diagnostics.

*Biography:* Matthew Apanius is the Managing Director of SMART Microsystems providing microelectronic packaging solutions for MEMS sensors. His MEMS product development experience includes applications spanning telecommunications, aerospace, automotive, industrial controls, hand-held displays, biomedical devices, and life science. His work with academic and government research projects include state-change physics in microgravity, anisotropic thermal behavior of nanomaterials, and nanomechanical structures for switches and acoustic wave devices. Prior to launching SMART Microsystems, Matthew was President of Microfabrication Solutions, Inc., a MEMS prototyping company located in Cleveland. He also co-founded a medical device start-up that utilizes microsystem technology for the creation of home-care medical products. He enjoys guest teaching at Case Western Reserve University on topics of entrepreneurship, engineering management, and intellectual property.

### **Basic Digital Imaging and Image Formats**

*Prof. W. Gray (Jay) Jerome Department of Pathology, Vanderbilt University Medical Center*

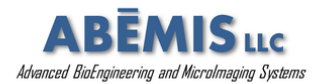
Most microscopy is now digital image based yet many microscopists do not fully understand basic digital image concepts. This talk covers, in a general, easy to follow manner, the basics of digital imaging in order to provide the microscopist with sufficient information to avoid common pitfalls. The field of "scientific" digital imaging is only a small subset of digital imaging. There are lots of things you can do in digital imaging that you should not do in scientific imaging because it destroys the integrity of your data, the image. Unfortunately, with modern digital imaging it is far too easy to inadvertently alter the image. In this talk, we review the basics of a digital image and discuss how to match the microscope parameters and image capture parameters in order to maximize image fidelity. We will also discuss post image processing and how it can affect the image data. Finally, the basics of image formats (JPEG, TIFF) are critical but not always understood, so we include a discussion of the appropriate uses of these formats. The image information is the data and not understanding basic "scientific" digital imaging can lead to accumulation of artefactual errors.

*Biography:* Jay Jerome is a member of the faculty at Vanderbilt University in the department of Pathology, Microbiology and Immunology. He is a fellow of the Microscopy Society of America, American Heart Association and the American Association for the Advancement of Science and a past President of MSA. He is co-director of Vanderbilt's Cell Imaging Shared Resource and has an active research program in cellular lipid metabolism. His interest is in quantification of structure as a means of correlating structure changes with metabolic alterations.

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