

Tuesday, May 7

TechColumbus Main Conference Room,
1275 Kinnear Road

Technical Program

3:00 PM	Welcome & Introductions
3:10 PM	Steven A. Ringel, IMR Director
3:30 PM	David McComb – Overview of CEMAS
3:45 PM	IMR Keynote Address: Atoms Under the Microscope Stephen J. Pennycook, Oak Ridge National Laboratory
5:00 PM	Welcome Reception at CEMAS and West Campus facility tours

Ohio Union, 1739 North High Street,
Columbus, Ohio

Wednesday, May 8

8:00 AM	Registration
8:45 AM	Introductions

Cross Cutting Session 1: Frontiers in Materials Microscopy

9:00 AM	From Atomic Scale to Materials Behavior: Atom-Probe Tomography Analyses to Understand Alloys and Ceramics Emmanuelle A. Marquis, University of Michigan
10:00 AM	Investigating Interfaces in Functional Materials and Biomaterials Using Analytical Electron Microscopy David McComb, The Ohio State University

10:45 AM	Spin Dynamics and Transport in Nanoscale Volumes Chris Hammel, The Ohio State University
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11:30 AM	Lunch – on your own
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Focus Session 1: Nano-Engineering of Hybrid Materials

1:00 PM	Self-Assembly of DNA Nanocages Chengde Mao, Purdue University
1:45 PM	Biomolecular Material Systems Sensing, Actuation, and Energy Conversion Donald Leo, Virginia Tech

Focus Session 2: Next Generation Electronics, Optoelectronics and Spintronics

Oxide Nanoelectronics On Demand Jeremy Levy, University of Pittsburgh
Optical and Electrical Characterization of Defects in Nanoscale III-Nitride Heterostructures Andy Armstrong, Sandia National Laboratories

2:30 PM	Break
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Break

2:45 PM	Hybrid Bioderived Electroactive Materials and Material Systems Vishnu Sundaresan, The Ohio State University
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Pure Spin Current Generation via Magnetic Dynamics: Spin Pumping in FM/NM and FM/Insulator/NM Heterostructures Yong Pu, The Ohio State University
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3:15 PM	Electrospinning: Variations at the Nanoscale Enable New Applications at the Macroscale John Lannutti, The Ohio State University
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Ferromagnetic Exchange, Spin-Orbit Coupling and Spiral Magnetism at the LaAlO ₃ /SrTiO ₃ Interface Onur Erten, The Ohio State University

3:45 PM	Single Molecule Electron Paramagnetic Resonance Richelle Teeling-Smith, The Ohio State University
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III-Nitrides Tunnel Junctions: Device Engineering and Applications Siddharth Rajan, The Ohio State University
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4:15 PM	Magnetically Actuated Micro-Robots: Self-Assembly, Dismantlement, Transport and Reassembly of Planar Constructs Ratnasingham Sooryakumar, The Ohio State University
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5:00 PM	Poster Session and Evening Reception
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Performance Hall and
Potter Plaza, Ohio Union

Thursday, May 9

Ohio Union, 1739 North High Street,
Columbus, Ohio

8:30 AM Registration (Ohio Union, Great Hall Meeting Room)

Cross Cutting Session 2: ICME – Integrated Computational Materials Engineering

9:00 AM Integrating Materials and Structures Performance Prediction via the Materials Genome Initiative
Dennis Dimiduk, Wright-Patterson Air Force Base

10:00 AM High-Throughput Experimental Tools for ICME
JC Zhao, The Ohio State University

10:45 AM Application of Integrated Computational Materials Science and Engineering to Microstructure/Property Interrelationships in Metallic Systems
Hamish Fraser, The Ohio State University

11:30 AM Lunch – on your own

Focus Session 3: Materials Design and Catalysis

1:00 PM X-Ray Absorption Spectroscopy in Catalysis Research
Jeff Miller, Argonne National Laboratory

1:45 PM High Dimensional Data Modeling for Materials Design
Srikant Srinivasan, Iowa State University

2:30 PM Break

2:45 PM Nitrogen-Doped Carbon Nanostructures with and without a Transition Metal as Oxygen Reduction Electro-Catalysts in PEM Fuel Cells
Umit Ozkan, The Ohio State University

3:15 PM Electrocatalytic Conversion of O₂ and CO₂
Anne Co, The Ohio State University

3:45 PM Synchrotron-Source X-ray Evaluation of Reactions at Environmental Surfaces
John Lenhart, The Ohio State University

4:15 PM Strategies for Development of Solid-State Electrochemical Sensors for Nitrogen Oxides (NO_x)
Chenhu Sun, The Ohio State University

5:00 PM Poster Session and Evening Reception

Performance Hall and
Potter Plaza, Ohio Union

Focus Session 4: Nanofluidic and Nanopore Engineering Systems

Conformational Sculpting of DNA
Walter Reisner, McGill University

NanoPlatform Embedded Reactions for Enhanced Chemical Transformations (NanoPERFECT)
Paul Bohn, University of Notre Dame

Break

Engineering Biology: The Role of Micro- and Nanofluidics in the Science of Biomedical Nanodevices
Terry Conlisk, The Ohio State University

Cell Probing and Engineering by Nanochannel Electroporation
Daniel Gallego-Perez, The Ohio State University

Nanofluidic Microdevices for Controlling the Cell Microenvironment
Derek Hansford, The Ohio State University

Engineered Surfaces for Flow Control in Nanochannels
Shaurya Prakash, The Ohio State University



Friday, May 10

Ohio Union, 1739 North High Street,
Columbus, Ohio

8:30 AM	Registration	
	Focus Session 5: New Physics and Device Applications in 2D Materials	Focus Session 6: Spin-Lattice Interactions
9:00 AM	Device Applications of 2D Semiconductor Materials Debdeep Jena, University of Notre Dame	Heat Control of and by Magnons Burkard Hillebrands, Technische Universität Kaiserslautern
9:45 AM	Probing the Electronic Structure of Novel Two-Dimensional Semiconductors Jie Shan, Case Western Reserve University	Thermal Spin Pumping: Magnon Thermal Conductivity and the Spin Seebeck Effect Joseph Heremans, The Ohio State University
10:30 AM	Break	
10:45 AM	Growth and Properties of 2D Layered Semiconductors Siddharth Rajan, The Ohio State University	Magnetic Field Gradients Push a Magnon Heat Flux Audrey Chamoire
11:15 M	Germanium Graphane Analgues Josh Goldberger, The Ohio State University	Panel discussion
12:15 PM	Closing and Poster Awards	

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CEM Introduction

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First Annual
IMR Keynote
Address

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Speakers A~Z
Abstracts & Biographies

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OSU Campus Map &
Local Lunch Options