SPRING 2024 SEMINAR SERIES



Joshua Robinson

Associate Dean for Graduate Education and Research (Acting)



Silicon Carbide: The Critical Semiconductor for the Energy Transition

Silicon carbide (SiC) is a semiconductor material at the center of the energy transition. It is anticipated that the demand for SiC will be driven by the growing global demand for electric vehicles and a transition to clean energy – the global market for automotive SiC Market alone is expected to grow 12.5% per year through at least 2030 to more than \$10B annually. This represents a tremendous opportunity for U.S. semiconductor manufacturing to play a role in energy distribution and utilization, with some even calling SiC "the new gold rush." However, despite the many billions of dollars currently being invested in fabrication of next-generation SiC electronics for clean energy, no open-access platform exists to train the next-generation materials technicians, engineers, and scientists in SiC crystal growth. Penn State is in a unique position to become the national leader in the synthesis and growth modeling of SiC, the central location for industry to explore new processes and the primary trainer of next-generation SiC materials scientists. In this talk, Robinson will provide an overview of the need for SiC, Penn State's role in advancing next-generation critical materials, and our plans for establishing a Silicon Carbide Innovation Alliance.

MAY 9

4 p.m.* – 5 p.m.

Coffee • Snacks • Connections

EMS ENERGY INSTITUTE C213 Coal Utilization Laboratory



EMS Energy Institute

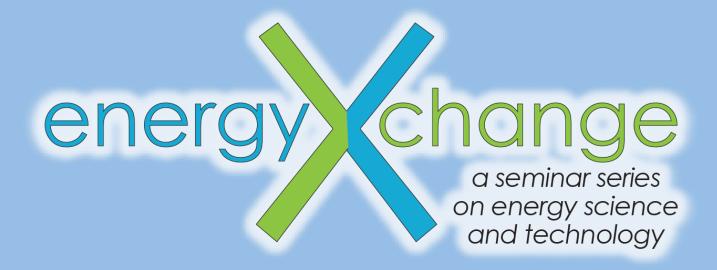
* Parking is available at the Institute at 4 p.m.

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Earth and Mineral Sciences
Energy Institute

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FEBRUARY 8

Eugene Morgan

Associate Head for Undergraduate Education
Undergraduate Program Chair of Energy Engineering
Associate Teaching Professor, John and Willie Leone Family
Department of Energy and Mineral Engineering

CO₂-SMART: A New Industry-University Collaborative Research Center for CO₂ Storage Modeling, Monitoring, Analytics, and Risk Reduction Technologies

MARCH 14

Erica Smithwick

Director of the Earth and Environmental Systems Institute and Distinguished Professor of Geography

Penn State's Climate Consortium: Partnerships for People and the Planet

MARCH 28

Sarma Pisupati

Professor of Energy and Mineral Engineering, Chemical Engineering, and Director of the Center for Critical Minerals (C^2M)

Mineral Security Challenges in Meeting the Goal of Net-Zero Carbon Emissions by 2050

APRIL 18

Thandazile Moyo

Assistant Professor of Energy and Mineral Engineering John and Willie Leone Family Department of Energy and Mineral Engineering

Integrating Sustainability in Minerals and Energy Resource Extraction Education

MAY 9

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