

SPRING 2024 SEMINAR SERIES

energyXchange

a seminar series
on energy science
and technology

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.

www.energy.psu.edu



PennState
College of Earth
and Mineral Sciences

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
(C²M)*
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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