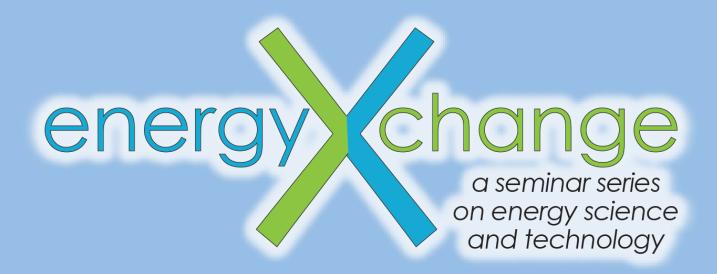
SPRING 2024 SEMINAR SERIES



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

With global dependency on fossil fuels still at 80%, carbonneutral/low-carbon power generation utilizing nuclear batteries (micro nuclear reactors), solar, wind, green--hydrogen, and biomass, and increased EV usage for transportation are crucial to achieving this target. Carbon capture, utilization, and storage (CCUS) are other vital requirements to accomplish the goal. These sustainable energy options, such as solar, wind, and energy storage (batteries), come with a steep increase in the associated demand for some rare earth and critical elements. China accounts for 84% of mined supply and 100% of refined production. While obtaining these minerals from primary domestic mineral deposits is crucial for sustainable energy security, secondary sources, including byproducts of coal mining and other energy-based waste products, are equally vital to developing a reliable supply chain. This presentation will discuss ongoing efforts at Penn State in multi-metal extraction from secondary sources and the need for global collaborations to reduce import reliance from China.

MARCH 28

4 p.m.* – 5 p.m.

Coffee • Snacks • Connections

EMS ENERGY INSTITUTE

C213 Coal Utilization Laboratory



EMS Energy Institute

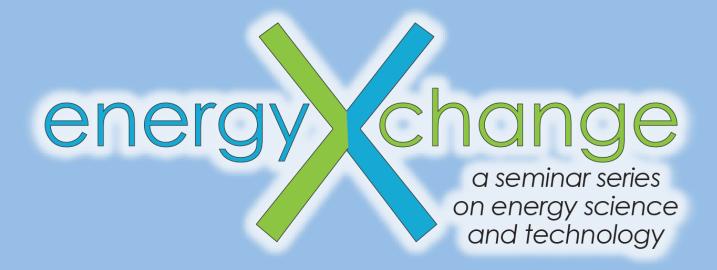
* Parking is available at the Institute at 4 p.m.

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Earth and Mineral Sciences
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SPRING 2024 SEMINAR SERIES



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

Joshua Robinson

Associate Dean for Graduate Education and Research (Acting)

Silicon Carbide: The Critical Semiconductor for the Energy Transition

Coffee • Snacks • Connections

4 p.m.* – 5 p.m.

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