



Critical Materials Institute  
AN ENERGY INNOVATION HUB

## SHORT COURSE

# Rare Earth Elements: *Mine to Magnet and Beyond*

January 23-24, 2023

Colorado School of Mines, Golden, CO

Inquiries: [cmiacademy2022@ameslab.gov](mailto:cmiacademy2022@ameslab.gov)

## Course Objectives

Engaging emerging and early career professionals in discussions of and solutions for clean energy technologies in the context of critical rare earth elements. This course will focus on the fundamentals and applications of rare earth permanent magnets through the wholistic lens of market and economy.

## Course Outline

### Introduction to Rare Earths and Permanent Magnet Materials

- Rare Earths Overview and Applications
- Magnetism and Fundamentals of Permanent Magnets

### REE Economy

- Criticality and Market Demand
- Supply Chains

### Life Cycle Stages of Rare-Earth-Based Magnets

- Mining, Extraction, Concentration, and Separation
- Metallization
- Magnet Fabrication and Manufacturing
- Recycling of End-Life Permanent Magnets

### Networking and Interactive Sessions



## Instructors

- **Dr. Roderick Eggert**  
Colorado School of Mines
- **Dr. Laura Lewis**  
Northeastern University
- **Dr. John Ormerod**  
John Ormerod Consulting, LLC
- **Dr. Ruby Nguyen**  
Idaho National Laboratory
- **Dr. Bruce Moyer**  
Oak Ridge National Laboratory
- **Dr. Vitalij Pecharsky**  
Ames National Laboratory
- **Dr. Parans Paranthaman**  
Oak Ridge National Laboratory
- **Dr. Ikenna Nlebedim**  
Ames National Laboratory

## Apply to Attend

Free to attend, with limited travel scholarships available. Class size is limited to 50. Please apply by Fri., Dec. 16. You will be notified of your acceptance to the course by Wed., Dec. 21.

[Click Here to Apply.](#)