



SHORT COURSE

Rare Earth Elements (REEs): Mine to Magnet & Market

April 11, 2024

Colorado School of Mines, Golden, CO

Inquiries: academy2024@ameslab.gov

Course Objectives

Engaging students, researchers, and professionals in discussions on and solutions for clean energy technologies in the context of critical rare earth elements (REEs). This course will focus on the fundamentals and applications of rare earth permanent magnets through the holistic lens of the 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, Processing, Concentration, and Separation
- Metallization
- Magnet Fabrication and Manufacturing
- Recycling End-of-Life Permanent Magnets

Networking and Interactive Sessions



Course Instructors

Session 1: **Brock O'Kelley**
Colorado School of Mines

Session 2: **Lana Alagha**
Missouri University of Science and Technology

Session 3: **Braeton Smith**
Argonne National Laboratory

Session 4: **Jun Cui**
Ames National Laboratory and Iowa State University

Session 5: **Parans Paranthaman**
Oak Ridge National Laboratory

Registration

Registration will be open from Friday, March 1 to Friday, March 22, 2024. Class size is limited to 45. A non-refundable course fee of \$50 is due upon registration.

[Click Here to Apply & Register](#)