

Title: Catalyzing the Renaissance of American Mining to Enable the Energy Transition

ABSTRACT

Climate change is perhaps humankind's largest existential crisis, with unabated emissions wreaking havoc on global environmental systems. Great technological leaps, unimaginable until recently, are scaling up to meet the challenge. BUT deployment of these will be hobbled by the looming lack of mineral-derived resources and workforce, leaving humankind unable to execute the clean energy transition. The talk will put forth ideas and concepts to stimulate discussion about how mines of the future could not only supply the transition but also, at the same time, address environmental and social needs. Some thoughts to be broached are how we:

- Adapt mining to be a carbon-negative solution to the metals industry's emissions issues (e.g., CO₂ sequestration within CO₂-reactive ore bodies during mining);
- Unleash the potential of geologic hydrogen - stimulating hydrogen produced from geologic formations to be a boundless, primary clean energy source;
- Develop mining approaches to access deep deposits with little to no disturbance to the environment (think laparoscopic approaches);
- Reimagine mineral processing to be more like an oil refinery - valorizing everything dug out of the ground;
- Foster the ideas and approaches that will create the new generation of technology startups and leaders needed to tackle this opportunity.

The answers literally lie in the rocks beneath our feet, please join in the discussion of how to unleash the potential of what is there.

PRESENTER

Dr. Douglas Wicks currently serves as a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E). His program areas at ARPA-E are on transformative approaches for critical mineral recovery from mining and waste-to-energy technologies.

Doug received his PhD in Polymer Science and Engineering from the University of Massachusetts-Amherst followed by a career at Bayer, starting as a Senior Chemist and rising to become VP of Research for the Coatings and Colorants Division. In 2002, Doug moved to the University of Southern Mississippi Department of Polymer Science and Engineering where he pursued research topics in polymer synthesis and lead an NSF funded program on Entrepreneurship at the Interface of Medicinal and Polymer Chemistry. In 2008 he moved into the startup world driven by the CleanTech 1.0 VC investments, working in a number of biomass to fuels/chemicals and medicinal chemistry companies. His last role before joining ARPA-E in 2019 was at Imerys, a French Industrial Minerals firm, where he first was the global research head of the Calcium Carbonates Business Unit, followed by developing and leading their external innovation effort across 28 mineral platforms. Doug has 60 issued US Patents and numerous publications.

