CMI
Critical Materials Institute
Ames, Iowa, USA

ABOUT

The Critical Materials Institute is an Energy Innovation Hub funded by the U.S. Department of Energy. CMI focuses on technologies that make better use of materials and eliminate the need for materials that are subject to supply disruptions. These critical materials are essential for American competitiveness in clean energy. Many materials deemed critical by the U.S. Department of Energy are used in modern clean energy technologies, including wind turbines, solar panels, electric vehicles, and energy-efficient lighting. The Department's 2011 Critical Materials Strategy reported that supply challenges for five rare earth metals may affect clean energy technology deployment in the coming years. The Critical Materials Institute focuses on five «critical» rare earths and two «near-critical» materials: dysprosium, terbium, europium, neodymium and yttrium, as well as lithium and tellurium.

The Ames Laboratory leads the CMI team, which includes partners from other national laboratories, universities and industry. Partners can join a various levels, including:

- CMI Affiliates will be informed about CMI research outcomes and provide input to CMI; Affiliates pay an annual fee based on the organisation type, and sign a Membership Agreement.
- CMI Associates may use the unique capabilities and expertise of CMI via DOE-approved contractual mechanisms, such as a Cooperative Research and Development Agreement (CRADA) or a Strategic Partnership Projects (SPP) agreement.
- CMI Team Members have research subcontracts from CMI or are providing cost sharing funds. Requirements include specific research project deliverables within the entity's areas of expertise, based on a scope of work and a negotiated budget, including cost-share as applicable, as approved by the CMI Advisory Board and Director. This level of participation is required to sign CMI's Master Non-disclosure Agreement and the Intellectual Property Management Plan (IPMP). Industrial Team members will have representation on the Industry Council.

EXPERTISE

CMI Director Alex King summarises CMI as doing four things:

- Diversifying supplies. If one source goes offline, we can rely on a different source.
- Developing substitute materials that can meet needs without using the materials we use today.
- Using the available materials more efficiently: reducing waste in manufacturing processes, and increasing the adoption of recycling.
- Forecasting what materials might become critical in the future.

FACILITIES & SERVICES

The Critical Materials Institute created unique facilities that are available for research and collaboration. These include:

- Pilot-Scale Separations Test Bed Facility
- Filtration Test Facility
- Bulk Combinatoric Materials Synthesis Facility
- Rapid Analysis of Combinatoric Sample Arrays
- Ferromagnetic Materials Characterisation Facility
- Thermal Analysis in High Magnetic Fields
- Improved criticality assessment capacity
- Thin-film combinatoric library production facility
- High-throughput analysis
- Electrophoretic deposition capability
- Toxicology test capability
- Rapid magnetic property assessment
- Rapid thermodynamic property assessment
- Micro-x-ray fluorescence analysis capability
- Metal reduction capabilities
- Robotic high-throughput catalyst development system

MORE INFORMATION

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