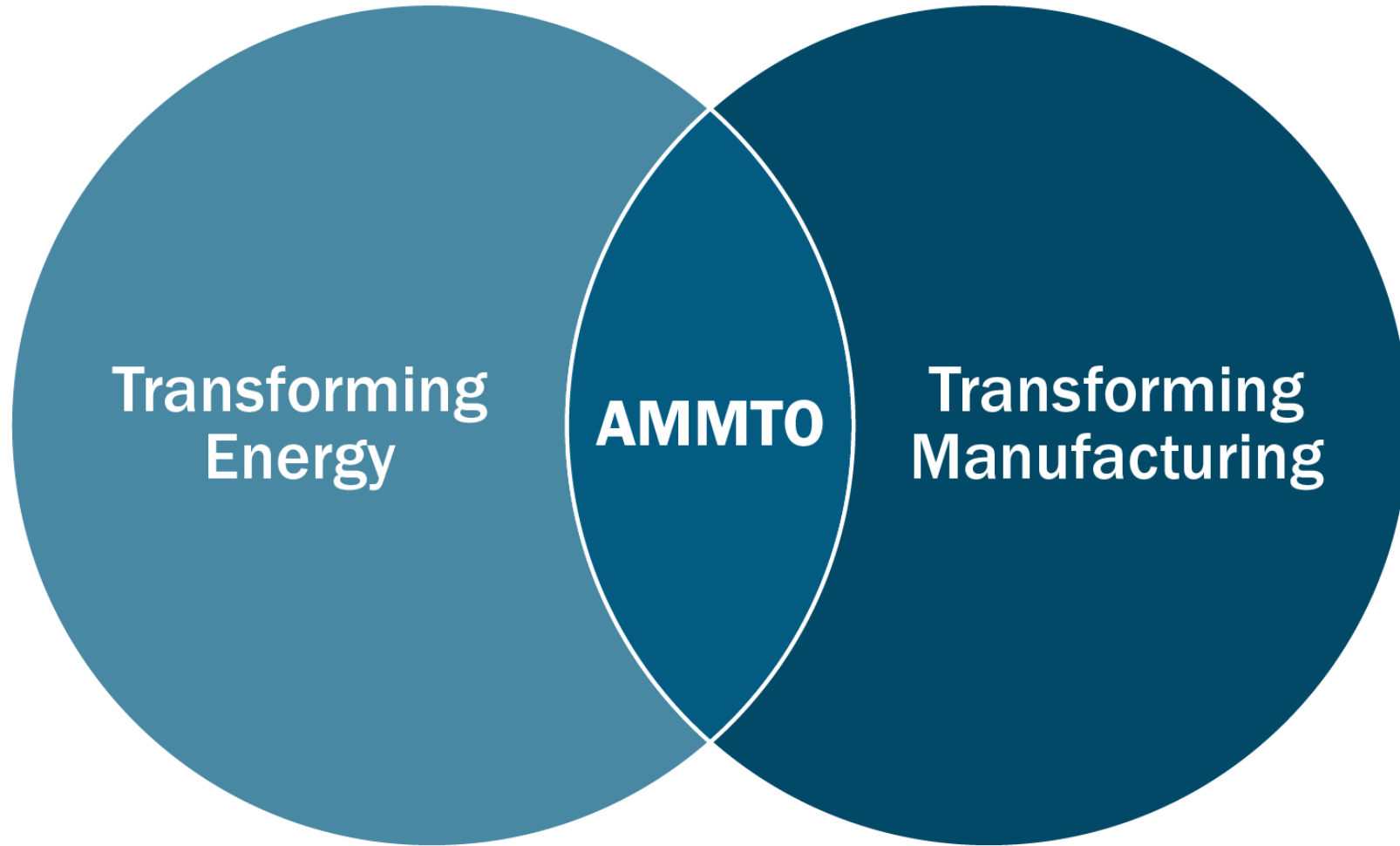
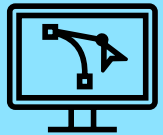


Advanced Materials and Manufacturing Technologies Office

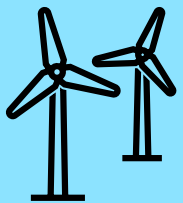


AMMTO's Subprogram Structure

NEXT-GENERATION MATERIALS & PROCESSES

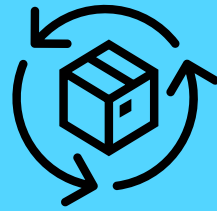


Advanced Manufacturing Processes and Systems



High Performance Materials

SECURE & SUSTAINABLE MATERIALS



Circular Economy Technologies and Systems

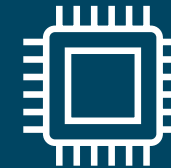


Critical Materials

ENERGY TECHNOLOGY MANUFACTURING & WORKFORCE



Energy Conversion and Storage Manufacturing

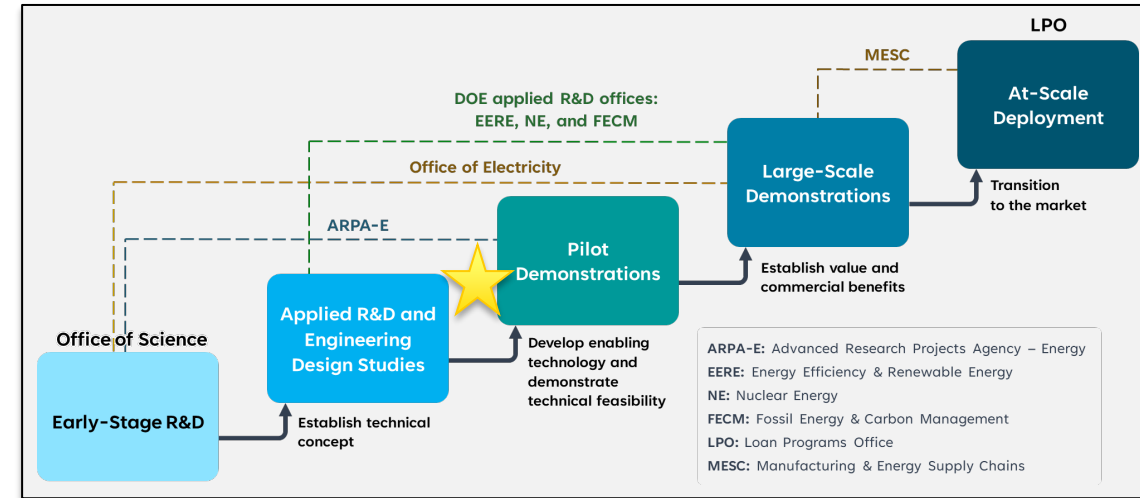
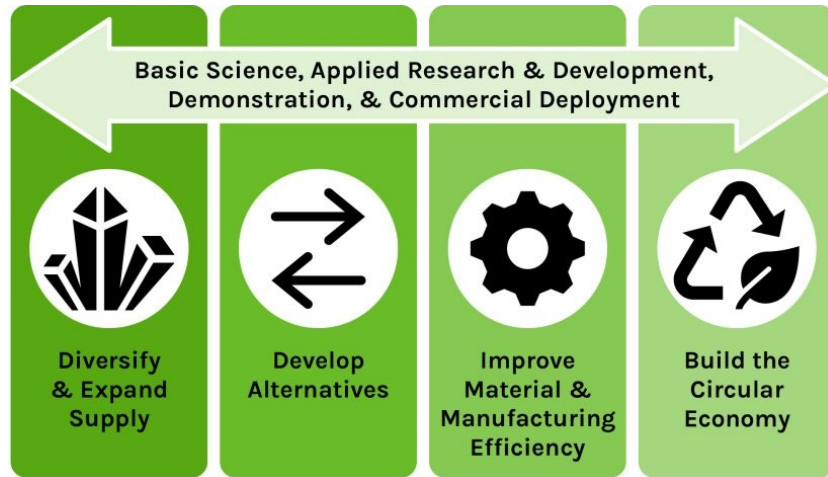


Semiconductors, Electronics, and Other Technologies Manufacturing



Entrepreneurial Ecosystems and Advanced Mfg. Workforce

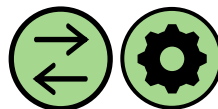
Critical Material Accelerator Program - \$10M FOA



Topic 1a
 Critical Material
 Lean/Free
 Magnets for
 Clean Energy
 Technologies



Topic 1b
 Motors and
 Drivetrains
 using Critical
 Material
 Lean/Free
 Magnets



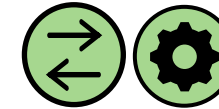
Topic 2
 Improved Unit
 Operations of
 Processing and
 Manufacturing
 of Critical
 Materials



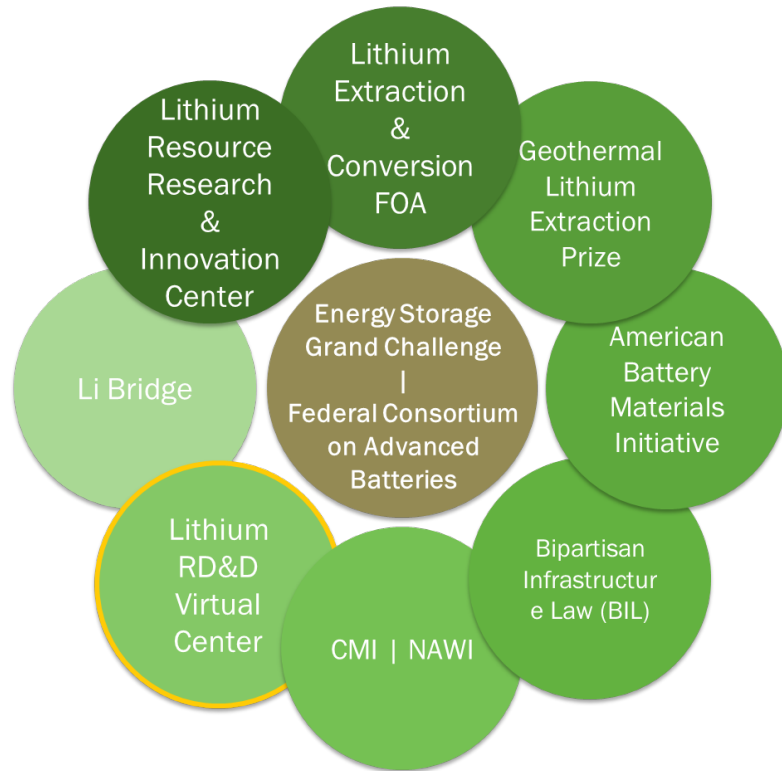
Topic 3
 Critical Material
 Recovery from
 Scrap and Post-
 Consumer
 Products



Topic 4
 Reduced Critical
 Material
 Demand
 Economy Wide



Lithium RD&D Virtual Center



- **8 projects from FY20 Critical Materials FOA**
 - Li extraction and separation from unconventional sources
- **10 projects from FY22 Lithium Extraction & Conversion from Geothermal Brines FOA**
 - Li extraction and conversion from geothermal brines
- **Bi-annual Lithium RD&D Coordination meetings**
- **Build an innovation ecosystem and facilitate rich scientific and technical exchange and discussion**
- **Coordination with other related federally funded efforts**

Microchannel-based Membrane-less Extraction	Magnetic Core-Shell Nanoparticles	Adsorbent Nanofibrous Mats	Dendritic Electrodeposition
Continuous DLE in solid electrolyte	Crystalline ion exchange DLE	Flow-electrode electrosynthesis	Selective leaching from claystone
Distillation assisted membrane DLE	Zwitterionic chromatography separation	Long lasting and highly selective DLE bead demonstration	Bipolar electrodialysis of solvent extracted lithium
Redox membrane DLE	Selective polymer scaffolding	CO2 and electrochemistry assisted solvent extraction	Controlled precipitation via micropillar enhanced particle separator
Electroactive particles and electrodialysis			

Education & Workforce Development

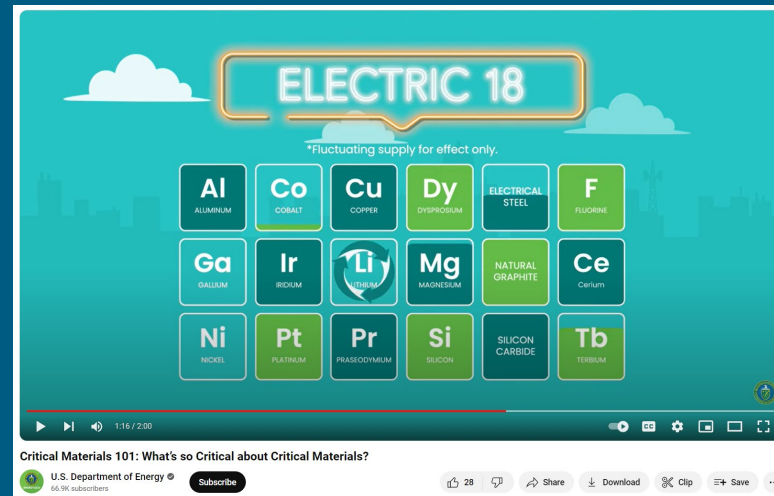
Training the next-generation of scientists and engineers to address critical material needs for the nation:

- **CMI Leadership Academy**
 - 18-month experience designed to develop leadership management skills for a group of emerging leaders within the CMI community
- **CMI Winter Meeting at Mines**
 - Annual graduate and postdoctoral professional two-day research seminar
- **CMI Internships & Externships**
 - Research collaboration at CMI team member institutions
- **Educational Outreach**
 - Exhibit at the Colorado School of Mines Geology Museum
 - K-12 educational toolkits for teachers and instructors
 - Webinars, professional societies, undergraduates, high-school students
- **Education and Workforce Development Workshop**
 - Input from academia, industry, national labs, and interagency will inform future critical material EWD investments



Learn more about AMMTO

- [AMMTO | Critical Minerals and Materials](#)
- [Critical Materials 101: What's so Critical about Critical Materials?](#)



- [AMMTO | Critical Materials Project Database](#)
- [AMMTO FY24 Data, Analysis, and Modeling Tools Lab Call](#) →

Topic 4: Analysis for
Critical Materials
Processes and
Technologies
Benchmarks