



Critical Materials Institute
AN ENERGY INNOVATION HUB

CMI Call for Open Innovation Projects

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Microsoft Teams Meeting Reminders

- This session including the Q&A are being recorded and will be available from our website tomorrow.
- Please keep cameras off to preserve bandwidth and microphones muted
- Please submit your questions using *only* the chat function during the general Q&A sessions.
- Jen Brockpahler, CMI Operations Manager, will serve as our moderator for the Q&A session.

DOE Critical Materials Institute

Mission: Accelerate the development of technological options that assure supply chains of materials essential to clean energy technologies – enabling innovation in US manufacturing and enhancing energy security.

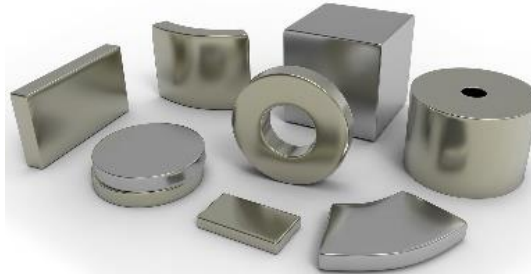
Diversifying Supplies

- Enable domestic production for source diversification
- Enable better co-production
- Modular, scalable systems that are environmentally friendly
- Supply chain integration



Driving Reuse and Recycle

- Cost-effective, safe, efficient recovery
- Enable sustainable circular economy businesses
- Meet half the needs of one U.S. business
- Supply up to 20% of domestic demand by 2040



Cross Cutting Research

- Critical-material free, high-performance magnets from domestically sourced materials
- Predict magnetic properties
- No-loss additive manufacturing
- Fracture resistant SmCo magnets for broad applications

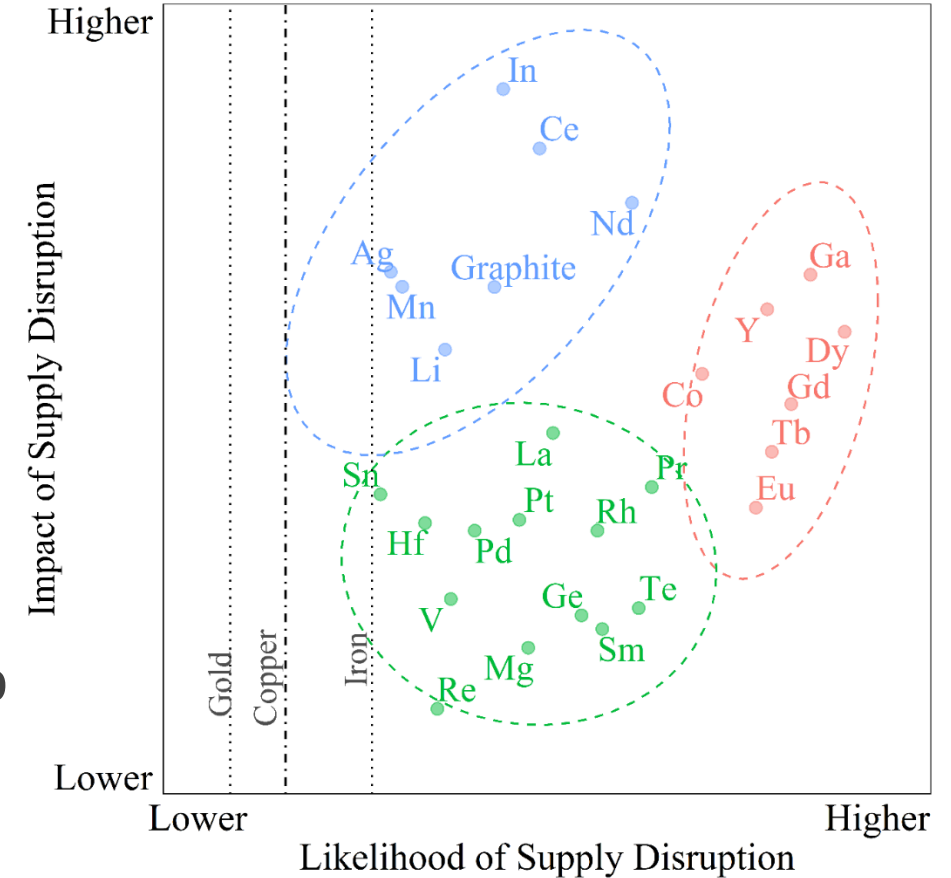


- Specific material application maps
- Tools for accelerated materials development
- Extrinsic magnetic property prediction
- Rapidly quantify economic competitiveness for adoption

Technical Approach

CMI addresses materials that have been identified to be critical for U.S. manufacturing, in the 5-15 year timeframe.

- We identify specific barriers to technology deployment and remove them through early-stage applied research.
- Research teams include materials producers and users (OEMs), along with university and national lab researchers.
- Speed and agility are key. We compete with alternative solutions, including technology substitution.



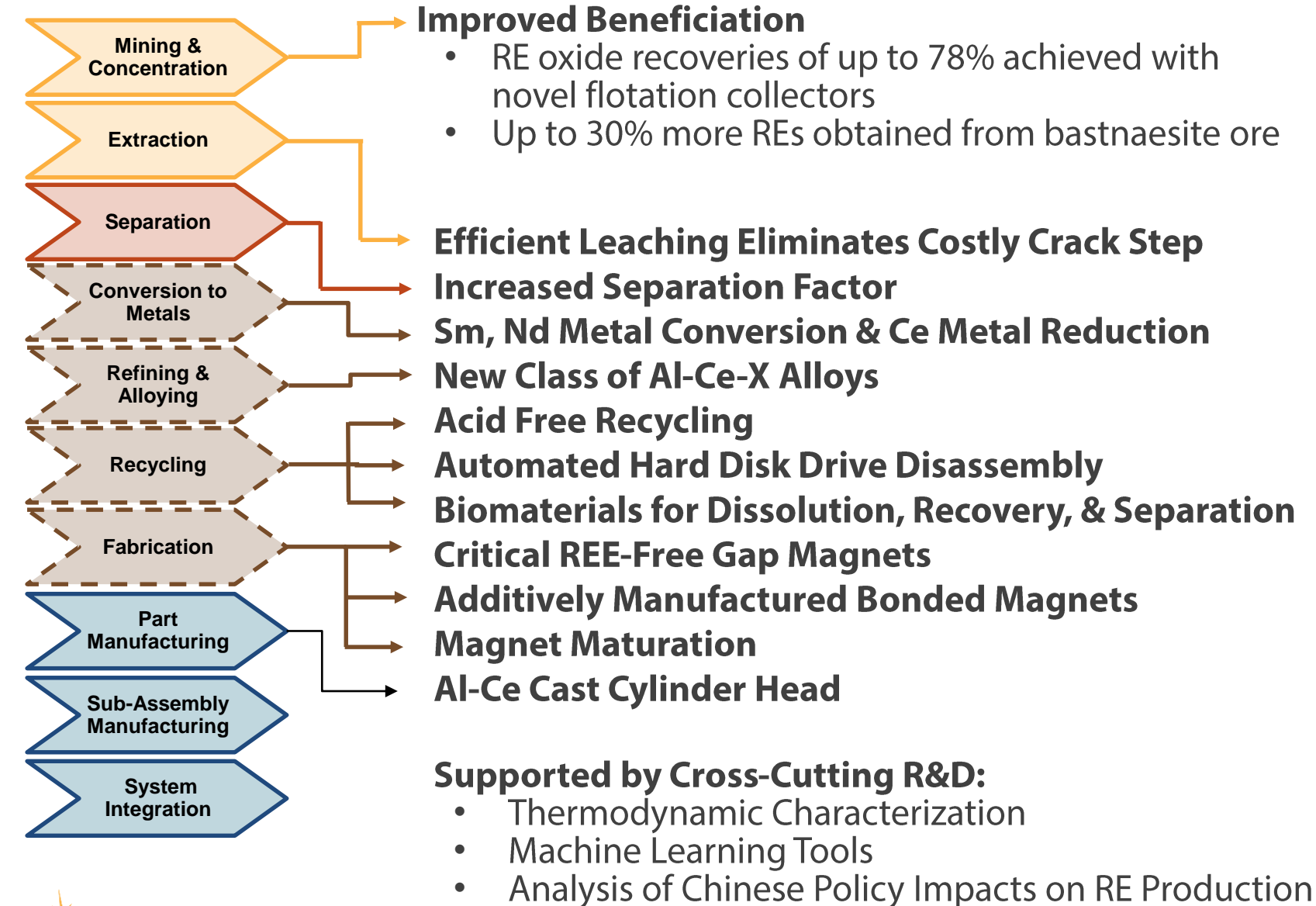
From 2020 CMI Criticality Assessment (Rod Eggert).

Clean Energy Focus

	Permanent Magnets	Energy Storage			Electronics					
	REEs	Li	Co	C*	Ga	In	Te	Mn	V	PGM
Vehicles	X	X	X	X				X		X
Electrical Storage		X	X	X				X	X	
Energy Generation Solar/Wind	X				X	X	X			
Targets								Potential Targets		

* Battery-grade graphite

6 CMI is addressing REEs across the entire supply chain



Flotation cell

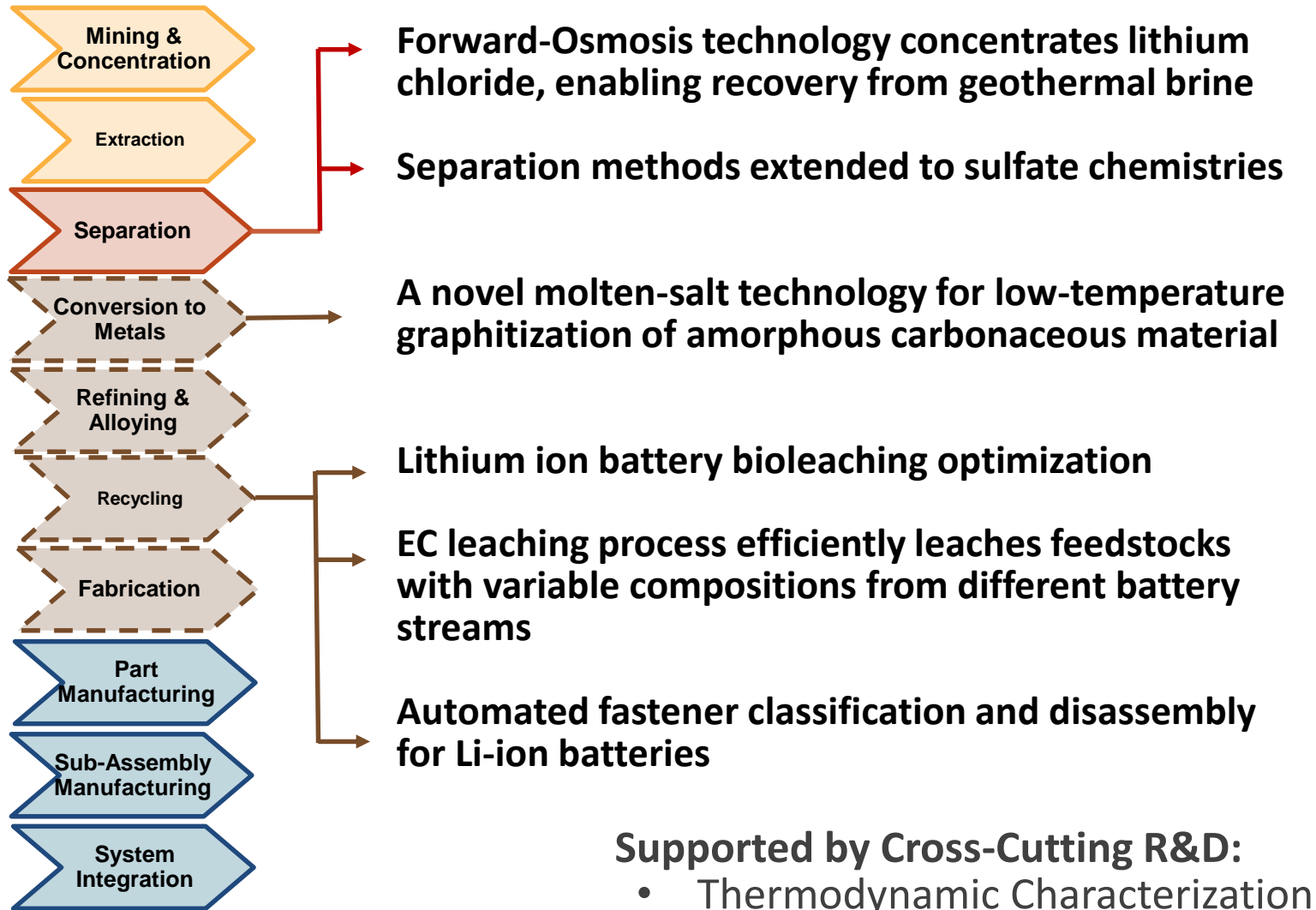


Al-Ce Casting



3D Printed Magnet

7 CMI is addressing the Li-ion batteries supply chain



Supported by Cross-Cutting R&D:

- Thermodynamic Characterization
- Biorecovery methods



Automotive 12 V 500 Ah / 24V 250 Ah
/ 48V 125 Ah Lithium Battery Pack

CMI Call for Open Innovation Projects

Intent:

- Seek out new opportunities to reduce material criticality
- Proposed opportunities should have an emphasis on *industrial relevance*, *participation*, and *adoption*
- Proposed research is intended to be *applied*
- Research should focus on at least one CMI Focus Area--
Diversifying Supply, Developing Substitutes, Reuse and Recycling and/or Cross-Cutting Tools

Topics of Interest

- Unconventional/mixed sources
- Selective separations
- Conversion
- *Extractive and recovery projects*
- *Innovative methods for mechanical or chemical processing*
- *Innovative solutions for conversion of RE oxides into pure metals, compounds or alloys for direct use*
- *Projects that address the challenges of separating components from electric motors and other devices*
- *Projects that reduce process steps and energy density*

Topics **Not** of Interest

- Mineral processing projects that begin *before* the beneficiation stage
- Developing substitutes for permanent magnets; PGM replacement in catalysts, and substitutes for Li-ion battery materials
- Extraction of critical materials from coal or coal by-products

Concept papers on these topics will not be considered.

Eligibility for OIP Proposals

- Proposing teams must consist of *at least two* organizations
- The team must contain *at least one member of industry*
- ~~Must contain at least one current CMI~~ *Team Member or Affiliate*
- Lead Investigator must be an employee of the lead institution
- Lead Institution must be a *domestic* institution
- Must be eligible and willing to become a full CMI Team Member upon award.

Eligibility for OIP Proposals, cont.

- Lead institutions are limited to one submission
- All submissions require a minimum 50% cost share
 - Period of Performance: Up to 12 months in length
 - Possibility of an additional 12 months of funding
 - Expected start date for projects is January 1, 2021
 - Proposed budget (exclusive of cost share) may vary between \$300K and \$500K (max) per year

Proposal Review Criteria

- Scientific and Technical Merit (40%)
- Relevant and Impactful (30%)
- Novelty (10%)
- Team Expertise (10%)
- Multi-disciplinary, multi-institutional (10%)

How and Where to Submit

- **Concept paper** submissions are due no later than 5 pm CDT on July 1, 2020, and should be emailed to cmioip@ameslab.gov.
- **Full proposals** will only be accepted from encouraged Concept papers.
- **Full proposals** are due no later than 5 pm CDT on August 21, 2020, and should be emailed to cmioip@ameslab.gov.

The Call and links to all supporting documents are available at:

<https://www.ameslab.gov/cmi/cmi-oip>

Important Dates

Call Release Date:	June 5, 2020
Informational Webinar:	June 11, 2020
Concept Papers Due:	July 1, 2020
Concept Paper Decision:	July 20, 2020
Invited Full Proposals Due:	August 21, 2020
Funding Notification:	September 30, 2020
Anticipated Start Date:	January 1, 2021

Questions

Please direct questions regarding the CMI Open Innovation Proposal call to OIPquestions@ameslab.gov

For more information on the CMI, please see our website at <https://www.ameslab.gov/cmi>



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