Focus Area 1

Diversifying Supply

Lead: Bruce Moyer, ORNL
Deputy: Scott Herbst, INL

New Sources of Critical Materials

C. Anderson, CSM

- Advanced Beneficiation Techniques
  C. Anderson, *CSM* (1.1.1)
- Recovery of REEs and Uranium from Phosphate Ore Processing; invention, *D. DePaoli*, *ORNL* (1.1.2)
- Improved Methods for Lithium Extraction; invention, *S. Harrison*, *Simbol* (1.1.3)

Ames: The Ames Laboratory
CSM: Colorado School of Mines
INL: Idaho National Laboratory
ORNL: Oak Ridge National Laboratory
Simbol: Simol Materials

Transformational Processing

R.S. Herbst, INL

- Enhanced Separation of Adjacent Rare Earth Elements; facility, *R.S. Herbst*, *INL* (1.2.1)
- Conversion to Metal, Alloys, and Materials
  B. Mishra, *CSM* (1.2.2)
- Ionic-Liquid Separation Processes; invention, story, *S. Dai*, *ORNL* (1.2.3)
- Computational Prescreening of Ligands
  T. Windus, *Ames* (1.2.4)

New Uses for Co-Products

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- Development of High Cerium Content Aluminum Alloys, *O. Rios*, *ORNL* (1.3.2)

CMI invention disclosures
Of 20 invention records posted online by January 2015, eight relate to FA1:

- Extraction of rare earth elements from phosphoric acid streams
- Selective composite membranes for lithium extraction from geothermal brines
- Methods of separating lithium-chloride from geothermal brine solutions
- Extraction of rare earths from fly ash
- Ceria-based catalyst for selective phenol hydrogenation under mild reaction conditions
- Catalysts for styrene production
- Task specific ionic liquids extractive metallurgy or rare earth minerals
- Separation of neodymium from praseodymium