

## **Material Criticality: Comparing China, the EU, Japan and the USA**

**R.G. Eggert, M. Brown, S. Fulton, J. Hofer, B. Jordan,  
H. Kim, S.K. Lee and B. Smith  
Division of Economics and Business  
Colorado School of Mines  
Golden, Colorado  
USA 80401**

Manufacturers depend on raw materials derived from minerals to provide functional properties to the materials, components and systems they produce. Some of these raw materials are subject to supply-chain risks or concerns about long-term availability. Raw materials that are essential, have no easy substitutes and are subject to supply-chain risks or concerns about availability are known as critical materials. This paper compares material criticality across four nations or regions: China, the European Union, Japan and the United States. For each nation or region, it evaluates the relative criticality of twelve materials or families of materials, using methods developed initially for national evaluations modified to permit cross-region comparisons and in light of data availability.