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An Overview of Rare Earth Science and Technology[1]

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Currently rare earth science and technology is robust: this includes all the major branches of science – biochemistry, chemistry, materials and physics. There are, however, currently some anomalies and distortions especially in the technology and applications sector of the rare earth field, which is caused by the dominance of China on the sales of rare earths and rare earth containing products. For the past 5 to 10 years ∼95% of rare earths utilized in commerce came from China. Although Chinese actions have lead to sudden and large price spikes and export embargoes, the rare earths are still available but at a higher cost. The start up of production in 2011 at mines in the USA and Australia will alleviate this situation in about two years. Basic and applied research on the condensed matter physics/materials science has hardly been impacted by these events, but new research opportunities are opening up especially with regard to the USA's military and energy security. Magnets seems to be the hottest topic, but research on battery materials, phosphors and catalysts are also (or should be) strongly considered.

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