**Topic 1. Critical Materials for Energy Systems Manufacturing**

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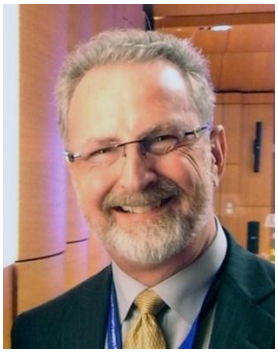

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He has been a Visiting Fellow of the Japan Society for the Promotion of Science; and a US Department of State Jefferson Science Fellow. He is a Fellow of the Institute of Mining Minerals and Materials; ASM International; and the Materials Research Society.

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## Abstract

In 2010, the prices of neodymium, dysprosium and several other rare earth elements ballooned to levels never seen before, and the attention of the world was drawn to the issue of critical materials – substances for which there are fragile supply chains and no easy substitutes. We will review the underlying causes of materials criticality; assess the current state of play; and describe the strategies that can be used to mitigate supply chain problems.