

High Performance Magnets with Abundant Rare Earth Elements

Disclosure Number

201603666

Technology Summary

This invention describes a new alloy system with promising permanent magnet properties. The materials contain none of the expensive "critical" rare earth elements (Nd, Dy, Sm) found current high performance magnets. The intrinsic properties of the alloys indicate that they may generate magnetic energy products comparable to SmCo-based magnets, intermediate between the best rare-earth based magnets (NdFeB) and the best rare-earth free magnets (AlNiCo). Filling this gap is important for applications that do not require the full strength of expensive rare-earth magnets, but use them because there are no alternatives. The Curie temperatures of the alloys is about 300C higher than NdFeB alloys. As a result, performance superior to NdFeB is expected at high temperature.

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