Short Communication

High-performance $\text{Sm}_2\text{Co}_{17}$ Based Alloy with Enhanced Magnetic Properties and Improved Corrosion Resistance

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doi: 10.20964/2018.09.44

Received: 18 May 2018 / Accepted: 11 July 2018 / Published: 5 August 2018

The magnetic properties, microstructures and corrosion resistance of $\text{Sm}_2\text{Co}_{17}$ based sintered permanent magnets with the nominal composition $\text{Sm}(\text{Co}_{\text{bal}}\text{Fe}_{0.125}\text{Cu}_{0.08}\text{Zr}_{0.06})_{7.4}$ have been systematically investigated. The $\text{Sm}_2\text{Co}_{17}$ based magnets were prepared by a traditional powder metallurgy method, where the techniques of making powder were ball-milling and jet-milling, respectively. An enhanced magnetic properties has been obtained for the magnet made of jet-milling powder, where the intrinsic coercivity H_{cj} increases from 2270 to 2879 kA/m, the maximum magnetic energy product $(BH)_{\text{max}}$ from 217 to 235 kJ/m³ with a small decrease in remanence B_{r} only. Besides, a remarkably improvement in electrochemical stability and corrosion resistance for the magnet with the jet-milling powder, which is mainly attributed to the magnet obtains a uniform continuous cellular structure with the smaller cell size and the homogeneous cell boundary phase.

Keywords: Corrosion; Magnetic properties; SmCo; Microstructure

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