Short Communication

Magnetic Properties, Microstructure and Corrosion Resistance of Ce-doped $\text{Sm}_{1-x}\text{Ce}_x(\text{Co}_{\text{bal}}\text{Fe}_{0.14}\text{Cu}_{0.07}\text{Zr}_{0.05})_{7.5}$ Magnets

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The influence of the Ce content and the relation among the magnetic properties, corrosion resistance and microstructure of the $\text{Sm}_{1-x}\text{Ce}_x(\text{Co}_{\text{bal}}\text{Fe}_{0.14}\text{Cu}_{0.07}\text{Zr}_{0.05})_{7.5}$ magnets are systemically studied. The enhanced magnetic properties ($B_r = 11.01$ kG, $H_{cj} = 15.5$ kOe, and $(BH)_{\text{max}} = 30.1$ MGOe) have been obtained with the slight Ce-doped ($x = 0.1$). The lower values of the corrosion potential E_{corr} and corrosion current density i_{corr} for the Ce-doped magnet indicate that electrochemical corrosion rate of the Ce-doped magnet slows down and the corrosion resistance of the magnet is stronger. The microstructure results show that the Ce-doped magnet obtains a more uniform cellular structure with the smaller cell size and the homogeneous cell boundary phase, while the content of the Ce shows no observable difference between the cell and cell boundary.

Keywords: Corrosion; SmCo; Ce; Magnetic properties; Cell size

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