Improvement of Corrosion Resistance and Magnetic Properties of NdFeB Sintered Magnets with Cu and Zr Co-Added

Minxiang Pan, Pengyue Zhang^{*}, Qiong Wu, Hongliang Ge

Magnetism key laboratory of Zhejiang Province, China Jiliang University, Hangzhou 310018, China

^{*}E-mail: zhang_pengyue@cjlj.edu.cn

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Cu and Zr powders are co-added as intergranular modifiers to improve the corrosion resistance of the NdFeB sintered magnets. Compared with the Cu and Zr free sample, the E_{corr} is increased sharply from -0.799 V to -0.697 V for the co-added sample with 0.15 wt.% Cu and 0.85 wt.% Zr, which demonstrate that small additions of Cu and Zr co-added can remarkably improve the electrochemical stability and corrosion resistance in salt solution. Besides, Co and Zr co-addition proved to result in relevant improvement in the magnetic properties, especially in the coercivity H_{cj} , H_{cj} was improved from 2000 to 2181 kA/m at room temperature. Further investigation of temperature dependence of coercivity demonstrates that Cu and Zr co-addition sample shows a larger $|\beta|$ compared to that of the Cu and Zr free sample.

Keywords: Corrosion, Magnetic properties, Sintered magnet

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