Short Communication

Corrosion Resistance of Electroplating of Cu–Ni/P Coatings on NdFeB Magnet Materials

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The aim of this study is to improve the NdFeB (Ni–Cu–Ni) plating process by reducing the magnetic shielding effect for the underlying Ni of the substrate and improving corrosion resistance. Two kinds of copper and Ni/P composite coatings on NdFeB magnets were successfully prepared with plating technology. Coating surface and cross-sectional morphologies were observed by scanning electron microscopy. Chemical composition of the coatings was studied through energy-dispersive spectroscopy, X-ray diffraction, and X-ray photoelectron spectroscopy. Corrosion resistances of the copper coating and Ni/P coatings were evaluated by potentiodynamic polarization and electrochemical tests, respectively. In the salt spray test, coatings exhibited good corrosion resistance ability. Results of the corrosion test in 3.5 wt.% sodium chloride solution, showed that the Cu–Ni/P composite coating provided excellent anti-corrosion performance for the magnets.

Keywords: NdFeB permanent magnet, corrosion, coating materials.

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