Short Communication

Study on the Properties of Jet Electrodeposited Nickel Coating by Rotating Interlacing Method

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In order to improve the problem of inferior adhesion and poor protection performance of traditional coating on sintered NdFeB, a novel method involving discontinuous cathode rotation and interlaced deposition was proposed. For this study, the interlaced coating with thickness of 20 μm was deposited on sintered NdFeB via interlaced jet deposition. The microstructures, surface morphologies were characterized using X-ray diffraction and scanning electron microscope, respectively. The adhesion strength was tested by automatic scratch tester. The corrosion behavior was analyzed by polarization curves. The results showed that the interlaced coating had fewer defects including cellular bulges, pits and pinholes, resulting in a uniform and smooth coating. The grain size decreased from 13.53nm of non-interlaced coating to 11.9nm. The adhesion strength increased significantly, from 17 N to 42 N. Compared with conventional nickel coating, multi-layer interlaced coating exhibited an enhanced corrosion resistance and can better protect NdFeB material.

Keywords: NdFeB permanent magnet; Jet electrodeposition; Interlacing; Adhesion strength; Corrosion resistance

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