Short Communication

Microstructure and Corrosion behavior of the Dy-doped sintered Nd-Fe-B Magnets Processed by Low-temperature Heat Treatment

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The low-temperature heat treatment process can be used to replace the traditional two-stage heat treatment process during the production of the Dy-doped Nd-Fe-B magnets, which saves the energy and also shortens the production period. In this work, the microstructure and corrosion behaviors of Nd-Fe-B magnets doped with Dy were analyzed by the scanning electron microscope observation, electrochemical and mass loss test. The results indicated that the corrosion resistance of the magnet with one-stage low-temperature annealing process was better than that with two-stage annealing process. Lots of (Pr, Nd, Dy)-oxide and Dy-oxide formed on the surface of the magnets after one-stage low-temperature annealing process, which decreased the electrode potential differences between the main phase grains and these oxide particles, and this further reduced the corrosion reaction driving force of the magnets.

Keywords: Nd-Fe-B magnets doped with Dy, Low-temperature process, Corrosion resistance

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