

Effects of Al on Microstructure and Magnetic Properties of (Nd,Pr)-(Fe,Co)-B Alloys Prepared by Mechanical Alloying

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Abstract : Nanocrystalline Nd₈Pr₂Fe_{79-x}Co₅B₆Al_x (x=0, 1, 2, 3) magnets were prepared by mechanical alloying and respective heat treatment, and the effects of the addition of Al on the microstructure and magnetic properties of Nd-Fe-Co-B alloy were studied. The changes in the nanostructure and magnetic properties were examined by X-Ray diffraction, combined with Field Emission Scanning electron microscopy (FeSEM) and vibrating sample magnetometer (VSM). Addition of Al was found to be effective for improving the coercivity and the hysteresis squareness in Nd-Fe-Co-B magnets without decreasing much the remanent magnetization.

Keywords : mechanical alloying, nanocrystalline, Nd-Fe-B, vibrating sample magnetomete

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