

Microstructure and Magnetic Properties of Nd-Fe-B alloys with Addition of Ti and Re

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Nanocomposite Nd-Fe-B magnetic materials are very interesting because of their good hard magnetic properties i.e. high coercivity, high remanence and energy product. In this paper, we present the role of Ti and Re additions on microstructure and magnetic properties of Nd₈Fe₈₀B₁₂, Nd₈Fe₇₆B₁₂Ti₄ and Nd₈Fe₇₆B₁₂Re₄ alloys. Moreover, the mechanical and chemical properties i.e. microhardness and corrosion resistance were also studied. The investigated alloys were produced by a rapid quenching method in a form of thin ribbons of about 0.025 mm thick. The microstructure was studied at room temperature by X-ray diffraction and Mossbauer spectroscopy in transmission geometry. The magnetic properties were recorded in the temperature range 2-800 K. The obtained results will be discussed from the point of view of microstructure and magnetic properties.

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