# Magnetization reversal processes in nanocrystaline (Pr,Dy)-(Fe,Co)-B bulk alloys

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The aim of this paper was to study the phase constitution, magnetic properties and magnetization reversal processes in the rapidly solidified bulk (Pr, Dy)-(Fe, Co)-B alloys doped with Zr, Ti, Mn and Ni. The 3 mm outer diameter tubes samples of the $Pr_8Dy_1Fe_{60}Co_7Ni_{(6-x)}Mn_xB_{14}Zr_1Ti_3$ (where x = 0, 3, 6) alloys were produced by suction-casting technique. The admixture of Zr was introduced in order to improve their glass forming abilities while Dy was substituted to enhance the magnetocrystalline anisotropy of hard magnetic phase. The effect of Ni and Mn addition on the phase constitution and magnetic properties was studied in the presented work. The phase constitution was investigated by X-ray diffractometry. The XRD analysis revealed that the tube samples were crystalline in as-cast state. The magnetic parameters were determined from hysteresis loops measured in the external magnetic field up to 2T at room temperature. Furthermore, rates of irreversible magnetization changes upon the change of external magnetic field H, were studied to determine magnetization reversal processes. In order to characterize interactions between grains of crystalline phases the $\delta$M plots were also constructed from recoil curves.