Structure, magnetic, magnetocaloric and magnetoresistance properties of $Pr_{1-x}Pb_xMnO_3$ perovskites

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Abstract: In our previous work, we have studied structure and properties of $La_{1-x}Pb_xMnO_3$ perovskites. Variation of doping content leads to alternating structure and magnetic properties of materials. In this paper, the investigation of structure, magnetic, magnetocaloric and magnetoresistance properties of family $Pr_{1-x}Pb_xMnO_3$ (x=0.1-0.5) is presented. The grain size of samples increases with Pb content. The FC and ZFC thermomagnetic curves measured at low field and low temperatures exhibit the spin-glass-like behavior. The magnetic entropy changes, $|??S_m(T)|$, were determined and showed belong to GMCE. The resistance measurements indicated that first two samples exhibited semiconducting conductivity in the whole measured temperature range, whereas in the rest of samples there is insulator-metallic transition on R(T) curves. Magnetoresistance measurements have also been performed.

Author Keywords: Magnetocaloric effect; Magnetoresistance; Manganites

Index Keywords: Electron transitions; Entropy; Grain growth; Magnetic properties; Magnetoresistance; Praseodymium compounds; Semiconductor doping; Spin glass; GMCE; Magnetocaloric effect; Metallic transition; Thermomagnetic curves; Perovskite

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