

Magnetocaloric effect in binary Gd-Pb alloys

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The aim of present work was to study the phase composition, microstructure and magnetocaloric effect of binary Gd-Pb alloys. Samples were prepared by arc-melting of high purity constituent elements. The XRD studies were carried out using a Bruker D8 Advance diffractometer with Cu-K α radiation and semiconductor detector Lynx-Eye. The microstructure and chemical composition of the samples were studied by scanning electron microscopy (SEM) using JEOL JSM 6610LV, equipped with an energy dispersive X-ray spectrometer (EDX). The XRD and SEM studies revealed biphasic structure built by pure Gd and secondary phase Gd-Pb. The magnetocaloric measurements revealed two maxima corresponding to two phases, which caused an increase of half width at half maximum of ΔS_M vs. T curve. The analysis of the temperature dependence of magnetic entropy change allowed to construct temperature dependence of exponent n.