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Giant field-induced adiabatic temperature changes in Ni-Mn-In-based Heusler alloys SUDIP PANDEY, ABDIEL QUETZ, ANIL ARYAL, IGOR DUBENKO, DIPANJAN MAZUMDAR, Southern Illinois University Carbondale, MIKHAIL BLINOV, VALERII PRUDNIKOV, IGOR RODIONOV, ALEXANDER GRANOVSKY, Lomonosov Moscow State University, SHANE STADLER, Louisiana State University, NAUSHAD ALI, Southern Illinois University Carbondale — Direct measurements of the adiabatic temperature change (ΔT_{AD}) of $Ni_{50}Mn_{35}In_{14.5}B_{0.5}$ have been done using an adiabatic magnetocalorimeter in a temperature range of 250-350 K, and with magnetic field changes up to ΔH=1.8 T. The initial susceptibility in the low magnetic field region drastically increases with temperature starting at about 300 K. Magnetocaloric effects (MCE) parameters were found to be a linear function of $H^{2/3}$ in the vicinity of the second order transitions (SOT), whereas the first order transitions (FOT) do not obey the $H^{2/3}$ law due to the discontinuity of the transition. The relative cooling power (RCP) based on the adiabatic temperature change for a magnetic field change of 1.8 T has been estimated. Maximum values of ΔT_{AD} = -2.6 K and 1.7 K were observed at FOT and SOT for ΔH=1.8 T, respectively. Acknowledgement This work was supported by the Office of Basic Energy Sciences, Material Science Division of the U.S. Department of Energy, DOE Grant No. DE-FG02-06ER46291 (SIU) and DE-FG02-13ER46946 (LSU).

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