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Structural And Magnetic Properties In Off-Stoichiometric Mn-NiGe Based Thin Film And Bulk Compounds ANIL ARYAL, ABDIEL QUETZ, SUDIP PANDEY, SIUC, USA, IGOR RODIONOV, VALERII PRUDNIKOV, Moscow State Univ,Russia, TAPAS SAMANTA, LSU, USA, ALEXANDER GRANOVSKY, Moscow State Univ,Russia, ANDREI SOKOLOV, UNL, USA, IGOR DUBENKO, SIUC,USA, SHANE STADLER, LSU, USA, NAUSHAD ALI, SIUC,USA — The crystal structure, magnetic properties and magnetocaloric effect in NiMnGe based thin film and bulk compounds are studied by room temperature XRD and magnetization measurements. The bulk compounds $\text{Ni}_{0.895}\text{Cr}_{0.105}\text{MnGe}_{1.05}$ and $\text{Ni}_{0.93}\text{Cr}_{0.07}\text{MnGe}_{1.05}$ were prepared by arc melting process. Thin film was obtained from $\text{Ni}_{0.895}\text{Cr}_{0.105}\text{MnGe}_{1.05}$ target using Pulsed Laser Deposition technique on MgO substrate. Both bulk and thin film crystalizes into hexagonal structure. For bulk $\text{Ni}_{0.895}\text{Cr}_{0.105}\text{MnGe}_{1.05}$ a first order magnetostructural transition from antiferromagnetic orthorhombic to ferromagnetic hexagonal structure was observed near transition temperature 134 K followed by the second order transition (SOT) from ferromagnetic to paramagnetic near Curie temperature $T_c = 204$ K. In case of thin film only the presence of SOT was observed near T_c . For $\text{Ni}_{0.93}\text{Cr}_{0.07}\text{MnGe}_{1.05}$, $\Delta T = 0.65\text{K}$ near $T_c = 209$ K for $\Delta H = 1.8$ T was observed. This work was supported by the U.S. DOE Award No. DE-FG02-06ER46291 & DE-FG02-13ER46946. Authors at Moscow State Univ. acknowledge Russian Foundation for Basic Research (Grant No. 15-02-01976). A. Sokolov acknowledges support from NSF DMR-1310542 grant.

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