

Abstract Submitted
for the OSS15 Meeting of
The American Physical Society

Magnetic and structural properties of $\text{Ni}_2\text{Mn}_{1-x}\text{Cr}_x\text{In}$ JEFFREY BROCK¹, MAHMUD KHAN, Miami Univ — The discovery of the martensitic phase transition (MPT) in a ferromagnetic (FM) state in Ni_2MnGa by Webster [P. J. Webster, K. R. A. Ziebeck, S. L. Town, and M. S. Peak, *Philos. Mag. B* **49**, 295 (1984)] in the early 80's have generated an intense research interest in Ni_2MnX ($X = \text{Ga, In, Sb, Sn}$) based stoichiometric and off-stoichiometric Heusler alloys. The continuous research efforts on these alloys have resulted in the discoveries of several fascinating properties including magnetocaloric effects (MCE) [Albertini et al., *J. Magn. Mater.* **272-276**, 2111 (2004)], large magnetoresistance (MR) [K. Koyama et al., *Appl. Phys. Lett.* **89**, 182510 (2006)] and exchange bias effects [Khan et al., *Appl. Phys. Lett.* **91**, 072510 (2007)], [Li et al., *Appl. Phys. Lett.* **91**, 112505 (2007)]. The multifunctional properties of these Heusler alloys can be controlled by manipulating the Mn concentration. Keeping this in mind, we have performed an experimental study on the structural and magnetic properties of Cr doped $\text{Ni}_2\text{Mn}_{1-x}\text{Cr}_x\text{In}$ Heusler alloys. The goal is to investigate and understand the effect of Cr doping on the magnetic and structural properties of these alloys. X-ray diffraction measurements reveal that the alloys exhibit the L_{21} cubic structure at room temperature. Magnetization and ac susceptibility measurements have been conducted to explore the magnetic properties of the samples. For all Cr concentrations, the alloys are ferromagnetic. The saturation magnetization and Curie temperature decreases with increasing Cr concentration. The ac susceptibility data show additional anomalies that change with change in Cr concentration.

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Date submitted: 13 Mar 2015

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