

Abstract Submitted
for the OSF20 Meeting of
The American Physical Society

The effect of stoichiometric variation on the magnetocaloric properties of $\text{Mn}_{0.5+x}\text{Fe}_{0.5}\text{Ni}_{1-x}\text{Si}_{0.95}\text{Al}_{0.05}$ alloys. RANJIT CHANDRA DAS, Department of Physics, Miami University, Oxford, OH-45056, USA, ARJUN K. PATHAK, PRAYUSHI BHORANIA, Department of Physics, SUNY Buffalo State, Buffalo, NY 14222 USA, MAHMUD KHAN, Department of Physics, Miami University, Oxford, OH-45056, USA — Magnetocaloric effect (MCE) signifies the thermodynamic phenomenon in which the application of an external magnetic field alters the temperature of a special class of materials. These materials are known as Magnetocaloric materials (MCMs). In recent years a wide variety of materials have been designed and discovered that exhibit giant magnetocaloric effects. However, most of these materials are often prepared either by rare earth, expensive, or toxic elements. Therefore, the discovery of new MCMs remains an active field of research. Keeping this discussion in mind, we are investigating the magnetocaloric properties of a series of $\text{Mn}_{0.5+x}\text{Fe}_{0.5}\text{Ni}_{1-x}\text{Si}_{0.95}\text{Al}_{0.05}$. The constituent elements of the system are cheap and abundant, which makes them a promising candidate for magnetic refrigeration. The crystalline and magnetic properties of the samples will be presented and discussed.

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Date submitted: 25 Sep 2020

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