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Magnetic and Magnetocaloric Properties in Non-Stoichiometric Gallium Deficient $\text{Ni}_2\text{MnGa}_{1-x}$ Heusler Alloys ALEXANDER MADDEN, MOLLIE CORRIGAN, LINDA BARTON, Rochester Institute of Technology — Magnetic data show that off-stoichiometric gallium deficient Heusler alloys of the form $\text{Ni}_2\text{MnGa}_{1-x}$ have structural martensite transition temperatures that increase strongly with x , while their ferromagnetic Curie temperatures remain nearly unchanged. The martensite transition approaches room temperature for $x = 0.13$. Samples were prepared by rf induction heating. The influence of quenching and post annealing on magnetic properties, as well as structural grain sizes and magnetic domain structure, were investigated. Since the first order structural phase transition can be adjusted to any convenient temperature, these materials offer intriguing possibilities as magnetic refrigerants. Magnetocaloric properties were investigated by direct measurement of ΔT with the application of field ΔH .

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