

Department of Physics Colloquium

Speaker: Dr. Pnina (Pearl) Ari-Gur

Professor, Western Michigan University

Heusler Alloys -- Unique Properties Dominated by Crystallography

Open to the public, free of charge

Monday, December 1, 2025 - 4:00 pm —1110 Rood Hall

Refreshments: 3:30-3:50 p.m., Bradley Commons, 2202 Everett Tower

Abstract: Heusler alloys may demonstrate unique combinations of properties, such as, ferromagnetic shape memory, antiferromagnetism, semi-metallicity and superconductivity. Their properties critically depend on their crystalline structures, texture, and chemical order. A combination of diffraction techniques is essential for the understanding of their properties and behavior, as they affect the entropy of the system, magnetic interactions, and all resulting properties. In the talk, we will discuss Heusler alloys, their exceptional properties, tailoring their properties through structure control, and their applications at multiple length scales.

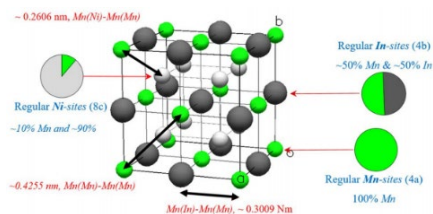


Fig. 1. Austenitic L21 ($a=0.6018$ nm) of $\text{Ni}_{45}\text{Mn}_{43}\text{In}_{12}$ (314 K, 4 T). Site occupancies of the Mn (green), In (black), and Ni (silver) and the interatomic distances between different crystallographic sites are shown.

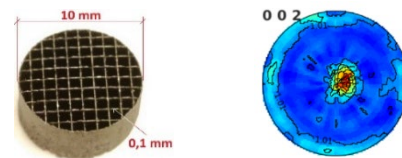


Fig. 2. Heat exchanger made by additive manufacturing ($\text{Ni}_{50}\text{Mn}_{18.75}\text{Cu}_{6.25}\text{Ga}_{25}$), demonstrates [001] preferred orientation along the build direction. This is the magnetization easy axis in this 1/4 mm martensite.



Parking: Metered parking is available in Parking Structure #2, near Miller Auditorium.

Campus map <http://wmich.edu/maps/printables.php>

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