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POS-34 Synthesis of inverse tetragonal Heusler alloys

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The broken inversion symmetry in non-centrosymmetric magnetics produces a chiral interaction responsible for the formation of stable nanoscale magnetic solitons in these materials, known as skyrmions. The inverse tetragonal Heusler alloys possess a D2d point group symmetry that gives rise to antiskyrmions, recently discovered in Mn1.4PtSn [1]. We are investigating the related family of compounds, Mn2-δZGe (where Z is a group 9 or 10 transition element), which are well lattice matched to Si(001). We present preliminary results of the combinatorial synthesis of Mn2-δZGe films prepared by magnetron sputtering and rapid thermal annealing. The stability of the tetragonal phase is explored with X-ray diffraction, X-ray photoelectron spectroscopy and wavelength dispersive spectroscopy.

[1] A. K. Nayak et al. Nature (2017).

Authors: Mr KALLIECHARAN, David (Dalhousie University); Mr MCCOOMBS, Jason (Dalhousie University); Prof. MONCHESKY, Theodore (Dalhousie University)

Presenters: Mr KALLIECHARAN, David (Dalhousie University); Mr MCCOOMBS, Jason (Dalhousie University)

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