

Abstract Submitted
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Physical Properties of Ni_2GeO_4 Spinel Perturbed by Magnetic Dilution and Applied Pressure JORY KOROBANIK, FERREIDON RAZAVI, Brock University — Geometrically frustrated magnetic systems have yielded an interesting and rich playground for physicists. Recently, a new disordered low temperature state was discovered in the frustrated pyrochlore type $\text{Ho}_2\text{Ti}_2\text{O}_7$ which is termed spin ice [1]. This phase is the magnetic analog to water ice with local spin disorder replacing proton disorder. Geometric frustration arises when nearest neighbor exchange interactions cannot be simultaneously satisfied resulting in large macroscopic degeneracy. This has the effect of suppressing Neel ordering temperature [2]. This work seeks to understand the effects of applied pressure and magnetic dilution to the frustrated spinel Ni_2GeO_4 . The parent material undergoes two closely spaced ordering events at $T_1 = 12.1\text{K}$ and $T_2 = 11.4\text{K}$. [3] Upon dilution a downward shift in the ordering temperatures is observed with a destruction of the lower T_2 transition. Heat capacity, AC and DC magnetometry are used to probe the changes in physical properties.

[1] Harris *et al*, *Phys. Rev. Lett.* **79**, 2554 (1997).

[2] J. Greedan, *J. Mater. Chem.*, 11, 37-53 (2001).

[3] Lashley *et al*, *Phys. Rev. B* **78**, (2008).

Jory Korobanik
Brock University

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