



Contribution ID: 308
compétition)

Type: **Poster (Student, In Competition) / Affiche (Étudiant(e), inscrit à la**

Magnetic Properties of GeFe₂O₄ Spinel

Wednesday 18 June 2014 19:00 (2 minutes)

Geometrically frustrated magnetic materials have attracted scientific interest due to exotic low temperature states such as the spin ice compound Ho₂Ti₂O₇. In this material, spin disorder mimics the proton disorder found in water ice, which exhibits magnetic monopole-like excitations.¹ Frustration occurs when magnetic ions are arranged in geometries where exchange interactions can not be satisfied by all nearest neighbours. Typical structures that yield frustration are triangular in nature. Spinel (AB₂O₄) exhibit frustration when magnetic ions occupy the B sites.²

This work seeks to determine and understand how magnetic dilution and applied pressure affect the magnetic ground state of GeFe₂O₄.

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

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

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Session Classification: DCMMP Poster Session, with beer (4) / Session d'affiches DPMCM, avec bière (4)

Track Classification: Condensed Matter and Materials Physics / Physique de la matière condensée et matériaux (DCMMP-DPMCM)