Clark Lucy

McMaster University

Title:

Spin Frustration in Lu2Mo2O7 and Lu2Mo2O5N2 Pyrochlores

Abstract:

The phenomenon of magnetic frustration can lead to a rich variety of interesting behaviour. Often this frustration has a geometric origin, which means that materials built up of geometrically frustrated networks of magnetic ions, such as the kagome and pyrochlore lattices, can evade conventional long range magnetic order at low temperature as a result of competing exchange interactions. Of particular interest are materials that combine strong magnetic frustration with low spin magnetic ions since they are believed to support exotic quantum spin liquid ground states. Here I will present a new S = ½ pyrochlore antiferromagnet, Lu2Mo2O5N2, which is obtained from a nitridation reaction of it precursor oxide, Lu2Mo2O7 [2]. I will show from diffuse and inelastic neutron scattering measurements that Lu2Mo2O5N2 remains dynamic down to the lowest temperatures of our experiments (~θ/100), whereas Lu2Mo2O7 enters an unconventional spin glass state at Tf ~ 16 K.