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Magnetic properties of the porous coordination polymer Ni3(OH)2(C4O4)2.3D2O

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The magnetism of porous coordination polymers is of long standing interest as changes to the hydration level of the pore have been shown to drive small changes in the structure of the framework, which in turn give rise to large differences in the magnetic properties. This capacity for magneto-structural correlations naturally leads to ideas such as utilising these properties as a magnetic switch or sensor, but also allude to the ability of tuning the magnetic properties of the material. In the current contribution, I will report on the characterisation of Ni3(OH)2(C4O4)2.3D2O. This porous coordination polymer has a magnetic topology where chains of alternating edge and vertex coupled triangles display ferromagnetic exchange interactions. These chains are then coupled antiferromagnetically. Application of small magnetic fields can give rise to a ferromagnetic state, but unusually this does not display a magnetic hysteresis. The magnetic phase diagram also shows some other unconventional behaviour. We have performed inelastic neutron scattering experiments on this materials using the Pelican time-of-flight spectrometer and have analysed the data using linear spin wave theory.

Speakers Gender

Male

Level of Expertise

Experienced Research

Do you wish to take part in the poster slam

No

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