

## Professor Andrew Harrison Professor of Solid-State Chemistry

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Research Interests: Magnetic materials, nanostructures,  
neutron scattering, microwave chemistry



Our research group has a number of related interests.

(1) Design, synthesis and study of magnetic materials that are designed to elucidate some of the most fundamental problems in solid-state science. Our key experimental tool is neutron scattering, performed at international research centres in Oxfordshire (the ISIS Facility, the world's most powerful pulsed neutron source: [www.isis.rl.ac.uk](http://www.isis.rl.ac.uk)) and in Grenoble, France (the Institut Laue-Langevin, the world's most powerful reactor source: [www.ill.fr](http://www.ill.fr)). Projects could involve residence in Grenoble if it suited the candidate and project.

(2) Synthesis and study of materials grown in mesostructured hosts, a constraint that can bestow on the material quite different properties from the bulk material.

(3) Exploration of the use of microwave radiation in chemistry, and in particular studies of the ways in which such energy may accelerate solid-state and materials chemistry processes, particularly through the use of *in-situ* diffraction techniques.

### SELECTED RECENT PUBLICATIONS

1. Ordered Mesoporous Fe<sub>2</sub>O<sub>3</sub> with Crystalline Walls. F.Jiao, A. Harrison, J.-C. Jumas, A.V. Chadwick, W.Kockelmann, and P. G. Bruce. *J. Am. Chem. Soc.*, 2006, **128** 5468 -5474
2. Quantum magnetism in the paratacamite family: Towards an ideal kagome lattice, P. Mendels, F. Bert, M.A. de Vries, A. Olariu, A. Harrison, F. Duc, J.C. Trombe, J.S. Lord, A. Amato, C. Baines, *Phys. Rev. Lett.* **98** (2007) 077204
3. Quantum dynamics and entanglement of spins on a square lattice, N. B. Christensen, H. M. Rønnow, D. F. McMorrow, A. Harrison, T. G. Perring, M. Enderle, R. Coldea, L. P. Regnault, and G. Aeppli, *PNAS* **104** (2007) 15264-15269
4. Rapid magnetosome formation shown by real-time x-ray magnetic circular dichroism, S. Staniland, B. Ward, A. Harrison, G. Van der Laan and N. Telling, *PNAS* **104** (2007) 19524–19528