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Total Scattering Study of Vanadium Tetracyanoethylene D.M. PAJEROWSKI, NIST Center for Neutron Research, National Institute of Standards and Technology, J.L. ARTHUR, Dept. Chem., Univ. Utah, K. PAGE, LANSCE, Los Alamos National Laboratory, J.S. MILLER, Dept. Chem., Univ. Utah, J.W. LYNN, NIST Center for Neutron Research, National Institute of Standards and Technology — Vanadium tetracyanoethylene powder prepared in deuterated dichloromethane (henceforth V-TCNE) was studied using neutron and X-ray diffraction. V-TCNE is a molecule-based magnet that has been shown to display magnetic order above room temperature[1] as well as photocontrol of magnetism at cryogenic temperatures.[2] To date, all reported synthesis preparations of V-TCNE yield amorphous compounds that lack Bragg peaks in diffractograms. In the absence of long range structural order, diffraction experiments may still elucidate short range structural order. The experimental results, which display short range correlations, will be presented and compared to Monte Carlo simulations.

[1]J.M. Manriquez, G.T. Yee, R.S. McLean, A.J. Epstein, and J.S. Miller, Science 252, 1415-1417 (1991).
[2]J.-W. Yoo, R.S. Edelstein, D.M. Lincoln, N.P. Raju, and A.J. Epstein, Phys. Rev. Lett. 99 157205 (2007).

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