Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

A Muon Spin Relaxation Study of NiTCNQ2 ADAM BERLIE, IAN TERRY, MAREK SZABLEWSKI, Durham University, SEAN GIBLIN, ISIS, RAL
— $NiTCNQ_2$ (TCNQ = 7,7,8,8-tetracyanoquinodimethane) is a novel metal-organic material that exhibits a magnetic transition at approximately 20 K. The material was first synthesized by Dunbar *et al* (Chem. Mater. 15, 1840) who identified the low temperature magnetic phase as a glassy ferromagnet. We have investigated this magnetic transition with muon spin relaxation (μSR). We synthesised the deuterated form of the material to minimise hyperfine coupling between the muon and H nuclear moments on TCNQ. Using μSR we probed the transition region to determine whether there was a local or long range coherence of the ferromagnetism. We found that zero field measurements yielded a Lorentzian relaxation along with a nuclear component from the nuclear spins of the nitrogen atoms. A longitudinal field of 0.5 mT decoupled the nuclear component revealing a dynamical Kubo-Toyabe relaxation suggesting that there may be a coexisting static and dynamic field distribution. This may imply a long range static ordering below the transition temperature.

Adam Berlie
Durham University

Date submitted: 03 Jan 2011 Electronic form version 1.4