Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

EPR Studies of Highly Interconnected Nanostructured Polyaniline Network[1] OLUDUROTIMI O. ADETUNJI, N.-R. CHIOU, N.P. RAJU , A.J. EPSTEIN, Department of Physics, The Ohio State University, Columbus, OH 43210-1117 — We present temperature-dependent X-band electron paramagnetic resonance susceptibility and linewidth studies of nanostructured polyaniline doped with perchloric acid (PANN/$HClO_4$). From analysis of the EPR data we determine that network has both Pauli- and Curie-like susceptibility with X^P of $\sim$2 x 10^{-5} emu/mole-2-ring repeat unit and a localized spin density of $\sim$ 1 spin per 400 2-ring repeat units and exhibits a Lorentzian-like lineshape. The EPR linewidth from 100 K to room temperature exhibits two different linear regimes, where the linewidth increases linearly with increase in temperature. We will discuss the role of Korringa relaxation in determining the high temperature linewidth. We will consider the roles of disorder, localization and interfiber contact within the nanostructure network.

[1]This work is supported in part by the NSF-IGERT Grant No. 0221678 and NSF-NSEC Grant No. 6000644.

Oludurotimi O. Adetunji
The Ohio State University

Date submitted: 03 Dec 2007 Electronic form version 1.4