

Professor Janice L. Musfeldt



- Professor, Physical & Materials Chemistry, Department of Chemistry, University of Tennessee.
- Co-Director, Chemical Physics Program.
- Member, Tennessee Advanced Materials Laboratory.
- B.S., Chemical Engineering, University of Illinois.
- Ph.D., Physical Chemistry with certification in Chemical Physics.
- Postdoctoral Research Universite de Sherbrooke.

Research Interests

The overall goal of my research is to investigate the spectroscopic properties of novel nanoscale, molecular and low-dimensional electronic and magnetic solids. We seek to understand the relationship between chemical structure, morphology, and functionality, bulk vs. microscopic aspects to various physical phenomena, and the nature of high magnetic field excitations and ground states. These interests place our program at the heart of materials chemistry, with significant overlap in both chemistry and physics. We have on-going initiatives in several classes of complex materials including magnetic nanoparticles, spin ladder compounds, multi-ferroic oxides, and organic conductor, and superconductors.

I have active research collaborations at several National Laboratories. These include Argonne National Lab, Brookhaven National Lab, Los Alamos National Lab, the National High Magnetic Field Laboratory, and Oak Ridge National Laboratory. We also have numerous funded international collaborations. Students in my Group benefit significantly from these interactions.

My research group has strong external support from the National Science Foundation (through the Division of Materials Research and), the U.S. Department of Energy (Materials Science Division, Basic Energy Sciences), and the JDRD Program at the University of Tennessee.

Selected Publications

1. *Pinned Low Energy Excitation in Metal Exchanged Vanadium Oxide Nanoscroll*, S.J. Cao, J.L. Musfeldt, S. Mazumdar, N. Chernova, and M.S. Whittingham, *Nano. Lett.* **7**, 2351 (2007).

2. *Bulk vs. Nanoscale WS_2 : Finite Length Scale Effects and Solid State Lubrication*, S. Brown, J.L. Musfeldt, I. Mihut, J.B. Betts, A. Migliori, A. Zak, and R. Tenne, *Nano. Lett.* **7**, 2365 (2007).

3. *Hydrogen Bonding and MultiPhonon Structure in Copper Pyrazine Coordination Polymers*, S. Brown, J.Cao, J.L. Musfeldt, M.M. Conner, A.C. McConnell, H.I. Southerland, J.L. Manson, J.A. Schlueter, M.D. Phillips, M.M. Turnbull, and C.P. Landee, *Inorg. Chem.* **46** 8577 (2007).

4. *Photoconductivity in $BiFeO_3$ Thin Films*, S.R. Basu, L.W. Martin, Y.H. Chu, M. Gajek, R. Ramesh, R.C. Rai, X. Xu, and J.L. Musfeldt, *Appl. Phys. Lett.* **92**, 091905 (2008).

5. *Spin-Lattice Interactions Mediated by Magnetic Field*, J. Cao, L.I. Vergara, J.L. Musfeldt, A.P. Litvinchuk, Y.J. Wang, S. Park, S.-W. Cheong, *Phys. Rev. Lett.* **100**, 177205 (2008).