

Neutron scattering with high magnetic fields at SNS and HFIR

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Because of the energy scales of moderated neutrons, their penetrating power for metals, and their large cross-section for magnetic materials, neutron scattering will always couple well with applied magnetic field sample environments and measurements. Magnetic fields are used in neutron scattering measurements to probe systems across complicated phase diagrams as well as to directly tune the energy scales of the magnetic excitations.

The Spallation Neutron Source (SNS) and High Flux Isotope Reactor (HFIR) have a suite of magnetic field sample environments that is used in both diffraction and spectroscopy measurements to characterise materials through discovery-based research. I will discuss recently acquired and proposed magnetic field sample environments for these facilities. This will include some discussion of lessons learned and recent science examples from measurements using these sample environments. I will also discuss proposed instruments at the ORNL facilities which will make use of bespoke high magnetic field sample environments.