

Neutron facilities and developments of single crystal neutron diffraction at ORNL

There are two neutron facilities at Oak Ridge national laboratory(ORNL): High Flux Isotope Reactor(HFIR) with the world's highest continuous neutron brightness and Spallation Neutron Source(SNS) with the world's highest peak neutron brightness. Supported by the powerful neutron sources of SNS and HFIR, the diffraction instruments at ORNL have developed world leading capabilities on high resolution nuclear structure analysis, magnetic structure and spin density determinations, contrast variation (particularly D₂O/H₂O) for nuclear structural studies, lack of radiation damage when using crystals of biological molecules such as proteins, and the fidelity to measure nuclear and magnetic diffuse scattering with elastic discrimination. Leading by the new trends in neutron diffraction studies, more features are continually implemented at each instrument with the developments of neutron technologies and beamlines constructions. This talk includes a facility update on the two neutron sources and a review on the single crystal neutron diffraction suite at ORNL.

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