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Advances in Neutron Scattering Instrumentation at Oak Ridge National Laboratory

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Oak Ridge National Laboratory hosts two world-class neutron sources for condensed matter research. The High Flux Isotope Reactor (HFIR) has recently added a cold source to augment the existing high-intensity thermal beams, and the Spallation Neutron Source (SNS) is the most powerful pulsed spallation neutron source in the world. Investments in neutron scattering instrumentation have come to fruition in a current set of 9 high-performance scattering stations in the user program, covering a wide range of diffraction and spectroscopic techniques. Examples of current scientific results include reflectometry from bio-responsive polymer films and the spectroscopy of slow spin dynamics in frustrated magnetic systems. In 2008 an additional 6 instruments will start user operation or commissioning at the SNS, increasing the breadth and depth of scientific possibilities. Novel techniques and new devices in such areas as sample environment and neutron polarization are also under development.