

Neutron Sciences Progress at Oak Ridge National Laboratory February 2008

Summary

- HFIR Cycle 413 began February 6 and ended March 1, 2008. HFIR Cycle 414 will begin March 26 and will end April 17, 2008.
- SNS neutron operations began November 15, 2007, and ended February 3, 2008. SNS will resume neutron production on April 2 and will end on July 20, 2008.

Instruments and Users

- Through February 2008, HFIR has 107 unique users from 7 instruments and SNS has 40 unique users from 3 instruments.
- Two additional HFIR instruments will become part of the General User Program this year: Powder Diffractometer (HB-2A) and the Four-Circle Diffractometer (HB-3A).
- Cold Neutron Chopper Spectrometer (CNCS, BL-5) continues toward shutter opening planned for April 2, 2008. An instrument readiness review was held and final alignment of the get-lost tube was completed
- Progress continued with the following installation activities at other SNS instruments: construction of the enclosure for the Powder Diffractometer (POWGEN3, BL-11A) has begun; the installation of borated poly shielding and fireboard on the sides, roof and half of the back of the detector tank exterior has been completed on the Fine-Resolution Fermi Chopper Spectrometer (SEQUOIA, BL-17); installation and alignment of the first section of neutron guide have been completed for the Single Crystal Diffractometer (TOPAZ, BL-12). See the image below.



- The sample handling robot was installed on the Liquids Reflectometer (BL-4B).
- The first use of the DANSE software for data reduction and analysis is taking place during the commissioning of the ARCS instrument (BL-18).

Operations

- HFIR Cycle 413 began February 6, 2008 and ended March 1, 2008. The goals for the High Flux Isotope Reactor in FY 2008 are operation for 6 cycles with >90% predictability. A total of 75 in-vessel irradiation capsules were installed for Cycle 413 to support medical isotope research, fusion reactor material research, and produce commercial isotopes. Also, 6 samples were irradiated in the neutron activation analysis facilities. HFIR Cycle 414 will begin March 26 and end April 17.
- SNS Cycle 2008-1 began on November 5, 2007, and ended February 3, 2008. The accelerator turn-on for the Operating Cycle 2008-2 will begin March 24, 2008, with neutron production beginning on April 2 and extending to July 20; the operations goals for this cycle are 1489 Hours of neutron production beam delivered at 85% efficiency. Beam Power will peak at 750KW at the end of Cycle 2008-2.
- The SNS schedule in the coming months may be perturbed by the planned, but undetermined end of life of the first mercury target. This foreseen operational event will cause the shutdown of SNS for about two weeks while a new target is installed. Users will be notified as soon as possible and rescheduled to a future time. Our goal is to predict the target end of life and schedule future target replacements within normal maintenance periods.

Employment Opportunities

The following positions are in the Neutron Sciences Directorate or are related to neutron scattering: Click on "View Open Positions" at <http://jobs.ornl.gov/> for additional details.

- Instrument scientist (VULCAN), ID 2814
- Scientific Software Engineer, ID 2815
- Neutron Diffraction Instrument Scientist (TOPAZ), ID 2656
- **Neutron Scattering Postdoctoral Fellowship Positions with ORNL through Oak Ridge Associated Universities** [description available at <http://www.ornl.gov/orise/edu/ornl/postneeds.htm>]:
 - Postdoctoral Research Associate in Neutron Scattering - SNAP [ORNL08-60-NSSD]
 - SNS Instrument Development Fellowship [ORNL08-51-NSSD]
 - Postdoctoral Research Fellow in Neutron Scattering – ARCS [ORNL08-32-NSSD]
 - Postdoctoral Research Associate: Protein Structure, Function & Dynamics [ORNL08-30-CSD]
 - Postdoctoral Research Associate: Molecular Computational Modeling [ORNL08-22-CSD]
 - Postdoctoral Research Associate: Virus Structure and Function, [ORNL08-21-NSSD]
 - Postdoctoral Research Associate: Biopolymer Structure [ORNL08-19-CSD]
 - Neutron Scattering Postdoctoral Research Fellow [magnetic nanoparticles] [ORNL08-08-NSSD]
 - Computational Molecular Biophysics [ORNL08-01-BSD]
 - Neutron Scattering Postdoctoral Research Fellow [Macromolecular diffractometer] [ORNL07-82]
 - Neutron Scattering Postdoctoral Research Fellow [EQ-SANS] [ORNL07-72-NSSD]
 - Beam Instrumentation Post-Doc [ORNL07-64-NSD]
 - Control System Programmer [ORNL07-32-SNS]
- **Educational and Research Experiences:** ORNL has educational programs covering many scientific disciplines with the education continuum from pre-college through postgraduate including teachers and faculty. The main link to all of these programs is <http://www.ornl.gov/orise/edu/ornl/>

Future meetings of interest to SNS and HFIR users

- SNAP-COMPRES: A joint meeting exploring opportunities for elastic scattering using SNS and HE X-rays, April 13-15, 2008, Oak Ridge. <http://www.compres.stonybrook.edu/Meetings/SNAP.pdf>
- American Conference on Neutron Scattering, May 11-15, 2008, Eldorado Hotel, Santa Fe, NM. <http://www.lansce.lanl.gov/acns2008/index.html>
- American Crystallographic Association, *Annual Meeting*, May 31-June 5, 2008, Knoxville, TN. <http://neutrons.ornl.gov/conf/aca2008/contact.shtml>
- Annual meeting of the DOE Experimental Program to Stimulate Competitive Research (DOE EPSCoR), July 22-25, 2008, Oak Ridge, TN.
- International Conference on Neutron Scattering, May 3-7, 2009, Knoxville, TN.