

Neutron Sciences Progress at Oak Ridge National Laboratory June 2008

Summary

- HFIR Cycle 415 ended June 30, 2008; HFIR Cycle 416 began July 16, 2008, and will end August 8, 2008.
- SNS finished its run cycle on July 10, 2008; the next SNS cycle will begin August 21, 2008, and will end January 3, 2009.
- **“Dynamics of Soft Matter” Workshop** will be held December 4-6, 2008, in Boston MA, as a satellite event of the MRS annual meeting. Contributed talks and posters are being solicited. Sessions on complex fluids, biology, polymers, and surfaces, are planned. See the website <http://neutrons.ornl.gov/conf/dsm2008/index.shtml> for more information including instructions for submitting contributed talks and posters.
- 10th United States National School on Neutron and X-ray Scattering will occur September 24-October 11, 2008, at both Argonne National Laboratory and Oak Ridge National Laboratory.

Instruments and Users

- The fabrication of detector shield for the HFIR Neutron Powder Diffractometer (HB-2A) is on schedule with delivery on June 20, 2008, and installation beginning thereafter. The detector shield is shown below right.



- The drop-in platform was installed on the SNS powder diffractometer POWGEN3 (BL-11A). The test is complete for neutron guide translator; 30 micron precision/ repeatability is achieved. The drop-in platform is shown above left during its installation.
- The first IDT commissioning experiment was performed on the Wide Angular-Range Chopper Spectrometer (ARCS, BL-18). ARCS is expected to join the general user program in fall 2008.
- The first successful test of the 3He cell with a permanent pump was performed on the Magnetism Reflectometer (BL-4A). The process of the polarization of the cell was monitored and calibrated with neutrons. The first test experiment using the 3He cell as an analyzer was made with a known sample.
- The first powder diffraction was recorded on the detector the Spallation Neutron and Pressure Diffractometer (SNAP, BL-3) on July 10, 2008.
- Through June 2008, HFIR has 194 unique users on 7 instruments and SNS has 100 unique users on 3 instruments.

Operations

- HFIR Operating Cycle 415 began on June 3, 2008, and was completed on June 30, 2008. Cycle 415 is the fifth of six cycles scheduled for the fiscal year ending September 30, 2008. An unscheduled mid-cycle shutdown interrupted Cycle 415 on June 21 when operators manually shutdown the reactor due to a faulty relay in the servo control system. Cycle 415 resumed on June 24 following repairs and xenon decay. This unscheduled outage reduced HFIR predictability for June to 96.7%. The monthly goal for HFIR in FY 2008 is to operate with a >90% predictability. Cycle 415 operation in June accounted for a total of 1993.10 MWd supporting 33 neutron scattering experiments conducted by 59 unique HFIR users; 76 in-vessel irradiation capsules; and irradiation of 16 neutron activation analysis samples. At the end of June, HFIR had produced 10,210 MWd in fiscal year 2008; well above the goal of 8160 MWd.
- The SNS accelerator turn-on for the Operating Cycle 2008-2 began March 24, 2008, with neutron production beginning on April 2, 2008, and ended July 10, 2008. The maximum beam power delivered in

June was 523 kW. The beam availability for June was 69%. There were a total of 166.3 MW-Hrs of beam delivered in June. Beam neutron production for Operating Cycle 2008-3 will begin August 21, 2008. Run 2008-3 will transition to Run 2009-1 at the end of September 2008 with no interruption of the beam delivery cycle. Neutron Production for Run 2009-1 will end on January 3, 2009.

- 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

Positions in the Neutron Sciences Directorate or related to neutron scattering are available for browsing. Click on "View Open Positions" at <http://jobs.ornl.gov/>. Recently announced open positions are listed below.

- NScD Software Engineer, ID 2917
- Mechanical Designer, ID 2935

Neutron Scattering Postdoctoral Fellowship Positions with ORNL through Oak Ridge Associated Universities [description available at <http://www.ornl.gov/orise/edu/ornl/postneeds.htm>. Recently announced open positions are listed below.

- Postdoctoral Research Associate in Neutron Scattering Research Using Juelich, [ORNL08-93-NSD]
- Post Master's Research Associate in Neutron Scattering Research, [ORNL08-92-NSSD]
- Post-Master's Research Associate in Software Engineering, [ORNL08-84-NSSD]
- Postdoctoral Research Associate Experimentalist in Neutron Sources Mechanical Engineering, [ORNL08-81-NFDD]
- **Other Postdoctoral Fellowships**
 - **Clifford G. Shull Fellowship** – The goal of the Shull Fellowship is to attract new scientific talent to ORNL for the development of its neutron science program. We are looking for candidates with exceptional ability who are capable of developing innovative research programs and who show the promise of outstanding science leadership. **Applications will be accepted July 1 – December 12, 2008.** For additional information about the Fellowship, see <http://neutrons.ornl.gov/shullfellowship/> or contact Bob Martin at martinrg@ornl.gov.
 - **Instrument Development Fellowship** - This fellowship opportunity is for the development of novel neutron instrumentation and instrument components to be used for neutron science at ORNL or other U. S. neutron centers. For additional information, see the website at <http://www.ornl.gov/orise/edu/ornl/postneeds.htm> for position ORNL08-51-NSSD.
- **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

- Denver X-ray Conference Workshop on Introduction to Rietveld; Combined Use of X-rays and Neutrons, August 4-5, 2008, Denver, CO. <http://www.dxcicdd.com/08/callforpapers.htm#workshops>.
- User Meeting of the Center for Nanophase Materials Sciences and Shared Research Equipment user facilities, September 24-26, 2008, Oak Ridge, TN. http://www.cnms.ornl.gov/upcoming_events/events.shtml
- 10th United States National School on Neutron and X-ray Scattering, September 24-October 11, 2008, Argonne National Laboratory and Oak Ridge National Laboratory. <http://www.dep.anl.gov/nx/> [Applications are closed.]
- Dynamics of Soft Matter, December 4-6, 2008, Boston MA. This is a satellite of the Fall 2008 MRS annual meeting. <http://neutrons.ornl.gov/conf/dsm2008/index.shtml>.
- Annual meeting of the National Society of Black Physicists and National Society of Hispanic Physicists, February 11-15, 2009, Nashville, TN. <http://www.nsbp.org/conference/>
- International Conference on Neutron Scattering, May 3-7, 2009, Knoxville, TN. Contact Al Ekkebus at ekkebusae@ornl.gov for details.
- 20th Annual VM Goldschmidt Conference June 14-18, 2010, in Knoxville, TN.