

Oak Ridge National Laboratory Neutron Sciences Progress Report March 2009

Neutron Production Highlights

At HFIR, Cycle 420 began February 18, 2009, and ended March 14, 2009.

At SNS, neutron production began March 12, 2009, and will continue through July 11, 2009.

Second Target Station planning session at SNS—The SNS-HFIR User Group will solicit input from the U.S. neutron community on the proposed capabilities for the Second Target Station at the Spallation Neutron Source during an ICNS Satellite event, Thursday, May 7, 2009, noon-1pm. Lunch will be provided.

Instruments and Users

Instruments continue to expand capabilities; stimulus funding to benefit beamline

Alexei Sokolov named Governor's Chair. Polymer scientist Alexei Sokolov has been named as the second University of Tennessee-Oak Ridge National Laboratory Governor's Chair. The Governor's Chair program, funded by the state of Tennessee and ORNL, is designed to attract top scientists to take part in the UT-ORNL research partnership. Sokolov will serve as the Governor's Chair for Polymer Science and will hold appointments in the UT Knoxville chemistry department and the Chemical Sciences Division at ORNL. See <http://tinyurl.com/sokolov09> for more details.

Software project spurs collaboration with students at Western Kentucky University. A new R&D project originated with undergraduate students and faculty at Western Kentucky University. The physics class project, which involves ORNL Sample Environment staff as collaborators, aims to develop LabVIEW software for an automated gas environment system.

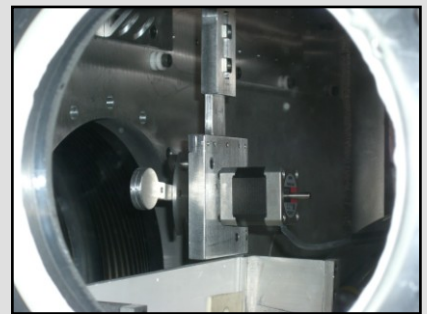
T₀ choppers installed on ARCS and SEQUOIA. The T₀ choppers block the

fast neutrons arriving at the chopper position almost immediately after the proton pulse strikes the target. By adding the T₀ choppers to the Wide Angular-Range Chopper Spectrometer (ARCS, SNS BL-18) and Fine Resolution Chopper Spectrometer (SEQUOIA, SNS BL-17), background scattering by the fast neutrons is eliminated and more accurate studies can be performed. The novel vertical axis design will spin up to 180 Hz, greatly extending the useful energy range of the instrument.

HFIR SANS capabilities expanded. A new high temperature sample changer has been added to available equipment for the HFIR SANS instruments; see top image. Also recently added, a new beam-spreader enables automated transmission measurements on the General Purpose SANS (HFIR, CG-2) in the HFIR cold-guide hall; see the image on bottom.

Beamline funds in Stimulus Package. Funds were included in the American Recovery and Reinvestment Act to accelerate completion of the external building for the Fundamental Neutron Physics Beamline (SNS, BL-13).

See the DOE news release at <http://tinyurl.com/doestimulus>.



New version of DANSE software released. The Distributed Data Analysis for Neutron Scattering Experiments (DANSE) project announces its mid-term release of software for the analysis of neutron scattering data at <http://danse.us>. New features include the alpha-release of the virtual neutron facility

<https://vnf.caltech.edu>. DANSE is funded by the National Science Foundation, and is managed in close collaboration with the SNS.

the Triple Axis HB-1 Spectrometer at the HFIR. This capability restores the polarization capability of the instrument; we expect that full polarization analysis capabilities will be available for the next round of proposals.

Polarizing capability added to Triple Axis Spectrometer. A new polarizing monochromator was added to

Operations

HFIR

HFIR Cycle 420 began on February 18, 2009 and continued through March 14, 2009. In addition to supporting neutron scattering experiments, Cycle 420 supported 53 in-vessel irradiation capsules. The FY2009 goals for HFIR include operation for 6 cycles with >90% predictability.

SNS

The SNS began accelerator startup on March 3, 2009; neutron production began March 12, 2009, and will continue through July 11, 2009.

Employment Opportunities

Positions in the Neutron Sciences Directorate or related to neutron scattering. Click on "View Open Positions" at <http://jobs.ornl.gov/> and view Position Category noted as "Science – Neutron Science":

- Target Systems Deputy Group Leader
- Neutron Scattering Lead Detector Scientist
- Neutron Scattering Detector Scientist

Neutron Scattering Postdoctoral Fellowship Positions with ORNL through Oak Ridge Associated Universities.

Descriptions are available at <http://www.ornl.gov/orise/edu/ornl/postneeds.htm>.

Recently announced open positions are:

- Postdoctoral Research Associate for Neutron Scattering on CNCS Beam Line [ORNL09-37-NSSD]
- Postdoctoral Research Associate for Developing the Spin-Echo Grazing Incidence Scattering (SERGIS) [ORNL09-36-NFDD]
- Postdoctoral Research Associate for Neutron Scattering Research on the Backscattering Spectrometer (BASIS) [ORNL09-23-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/>

Meetings of Interest to SNS and HFIR Users

April 14-16, 2009, Workshop on a National Materials Irradiation Sciences User Facility, Oak Ridge, TN. <http://neutrons.ornl.gov/conf/mi2009/index.shtml>.

May 3-7, 2009, International Conference on Neutron Scattering, Knoxville, TN. <http://neutrons.ornl.gov/conf/icns2009/index.shtml>. The following satellite events may also be of interest to the neutron scattering community:

Workshop on Inelastic Neutron Scattering, May 1-2.

Short Course on Neutron Imaging, Sunday, May 3, 9 am -12 noon

Tutorial on the Use of Pair Distribution Function in Neutron Scattering, Sunday, May 3, 9 am - noon

Symposium to Celebrate the Neutron Career of Professor Costas Stassis, Sunday, May 3, 2-5 pm

VENUS Instrument Development Team meeting, Sunday, May 3, 2-5 pm

CORELLI Instrument Development Team meeting, Tuesday, May 5, 2009, 4-6 pm

International McStas Workshop on Virtual Neutron Scattering, Sunday, May 3, 9 am – noon, 2-5 pm

Second Target Station at SNS: The SNS-HFIR User Group solicits input from the U.S. neutron community on the proposed capabilities for the Second Target Station at the Spallation Neutron Source. Thursday, May 7, 2009, noon-1pm. Lunch will be provided. International observers are welcome. http://neutrons.ornl.gov/conf/icns2009/E_SecondTarget.shtml.

May 30-June 13, 2009, The 2009 National School on Neutron and X-ray Scattering will be held at Oak Ridge and Argonne National laboratories. Over 160 applications have been received and are being reviewed. Details and registration information are at <http://www.dep.anl.gov/nx/>.

June 13-18, 2010, 20th Annual VM Goldschmidt Conference, Knoxville, TN. This is the foremost meeting of the year for the worldwide geochemistry community. <http://www.goldschmidt2010.org>.

Neutron Science in the News

[ORNL's 'first installment' of stimulus funding \(Atomic City Underground 3/23\)](#)

ORNL will receive \$71.2 million in science-related funding from the government's economic stimulus package, the Dept. of Energy announced today. A fact sheet distributed by DOE indicates that the "lion's share" of the ORNL money will be used for lab modernization, including a new Chemical and Materials Science Laboratory. Construction of the new \$95 million lab is expected to begin by late spring, according to earlier reports from ORNL. DOE also said some money would be used for improvements at the Spallation Neutron Source, including work on a new beamline known as the Fundamental Neutron Physics Beamline. There also will be some upgrades to the lab's nanoscience research facility, which is known as the Center for Nanophase Materials Sciences.

[Energy Secretary Announces \\$1.2B in Science Funding \(HPC Wire 3/23\)](#)

Energy Secretary Steven Chu announced \$1.2 billion in new science funding under the American Recovery and Reinvestment Act for major construction, laboratory infrastructure, and research efforts sponsored across the nation by the DOE Office of Science. Secretary Chu made the announcement during a visit to the Brookhaven National Laboratory. Included among the approved projects are, among others: \$330 million for operations and equipment at Office of Science major scientific user facilities, used annually by over 20,000 researchers. Facilities supported by Recovery Act funding include, among others, the Spallation Neutron Source at ORNL, the world's most intense pulsed accelerator-based neutron source, used in advanced materials science, chemistry, and biology research.

[UT-Battelle receives \\$10 million \(Knoxville News Sentinel 2/5\)](#)

The Department of Energy gave UT-Battelle high marks and more than \$10 million for its management of Oak Ridge National Laboratory last year. In its annual report card, the ORNL contractor - a partnership of the University of Tennessee and Battelle Memorial Institute - received seven grades of A- and one B+ for fiscal 2008, which ended Sept. 30. As a result, UT-Battelle earned \$10,058,000 out of a maximum available fee of \$10.7 million..."In summary, UT-Battelle achieved a high level of performance with numerous accomplishments," DOE Manager Gerald Boyd said in a Feb. 3 letter to ORNL Director Thom Mason...Boyd praised the contractor's work done in high-performance computing, noting that Oak Ridge was responsible for some of the year's top scientific breakthroughs with supercomputers...The DOE official said high-level work continued at the Spallation Neutron Source and the High Flux Isotope Reactor, which "maintained a perfect record of on-time startups with 99 percent reliability."

The most up-to-date news articles featuring neutron science performed at ORNL are available at <http://neutrons.ornl.gov/snsnews/snsnews.shtml>. You can sign up for an RSS feed here: <http://neutrons.ornl.gov/snsnews/index.shtml>.