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The PCS Facility for Neutron Protein Crystallography at Los Alamos. Benno P. Schoenborn, Paul Langan., Bioscience Div., Los Alamos National Laboratory, M888, Los Alamos, NM 87545 USA.

The **PCS** (Protein Crystallography Station) at Los Alamos Neutron Science Center, is a high performance neutron protein crystallography beam line funded by the Office of Biological and Environmental Research of the U.S. Department of Energy. Beam-time is free to expert and non-expert users and is allocated twice a year through a call for proposals and a peer review process.

Although most protein structures are determined using X-rays, the position of hydrogen atoms and the coordination, sometimes even the position of water molecules, cannot be directly determined at resolutions typical for most protein crystals. Hydrogen atoms are the primary motive force in most enzymatic processes. Neutron diffraction is a powerful technique for locating hydrogen atoms even at resolutions of 2Å-2.5Å and can therefore provide unique information about enzyme mechanism, protein hydrogen and hydrogen bonding.

For an experiment on the PCS, protein crystals have to be ~1mm³ in volume. Crystals of perdeuterated protein can be significantly smaller. Users of the PCS have access to neutron beam-time, perdeuteration facilities and also support for data reduction and structure analysis. The beam-line exploits the pulsed nature of spallation neutrons and a large electronic detector in order collect wavelength resolved Laue patterns using all available neutrons in the wavelength range 1Å to 5Å. This poster describes the facility, some groundbreaking results from our second year of operation, and provides information about obtaining beam-time.

For more information about the **PCS** and experimental requirements, contact Paul Langan (505) 665 8125, langan_paul@lanl.gov or Benno P. Schoenborn (505) 665 2033, schoenborn@lanl.gov. The PCS is funded by the Office of Science and the Office of Biological and Environmental Research of the U.S. Department of Energy.