

Neutron Scattering Instruments – How we use vacuum chambers

Kenneth W. Herwig

Neutron Sciences Directorate, Oak Ridge National Laboratory

Large vacuum chambers are routinely employed at neutron scattering facilities, particularly pulsed spallation neutron sources, primarily to improve the signal-to-noise ratio of individual neutron scattering instruments. This method is extremely valuable for inelastic scattering instruments where the desired signals are typically quite weak compared to other scattering processes. This talk will discuss the operational principles of such instruments, the need for and benefits of the vacuum system, and the types of apparatus installed in the vacuum chamber.