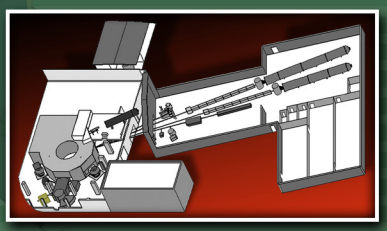
Instrument Fact Sheet

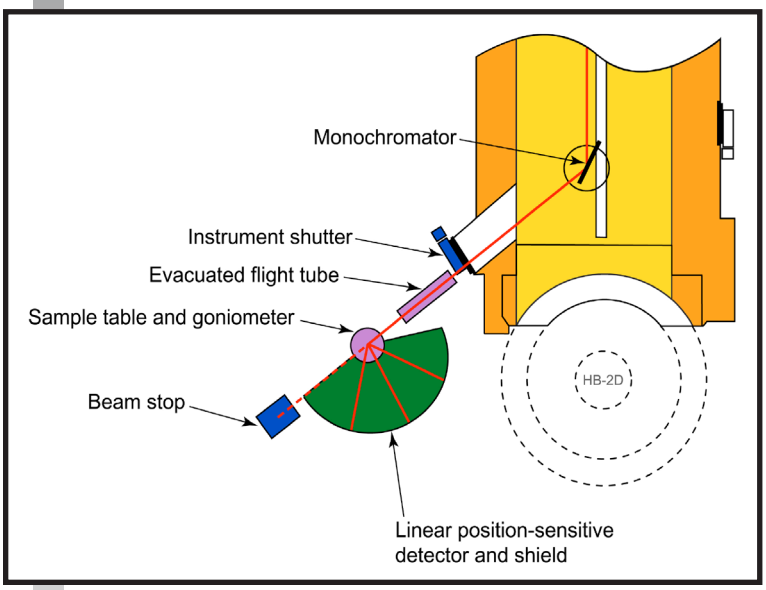
BEAM LINE **HB-2c**

High Flux Isotope Reactor



WAND – US/Japan Wide-Angle Neutron Diffractometer

The HFIR HB-2C WAND instrument was designed to provide two specialized data-collection capabilities: (1) fast measurements of medium-resolution powder-diffraction patterns and (2) measurements of diffuse scattering in single crystals using flat-cone geometry. For these purposes, this instrument is equipped with a curved, one-dimensional ^{3}He position-sensitive detector covering 125° of the scattering angle with the focal distance of 71 cm. The sample and detector can be tilted in the flat-cone geometry mode. These features enable measurement of single-crystal diffraction patterns in a short time over a wide range of the reciprocal space, as well as performance of time-resolved experiments for structural transformations having short time constants. The WAND detector (ORDELA 1410N) is a multianode type (624 anodes and a 0.2° pitch) ^{3}He gas counter specially designed for this instrument. This detector has an intrinsic angular resolution of 0.25° and a maximum counting rate per anode of 10^5 counts/s.



Specifications

Beam spectrum	Thermal
Monochromator	Vertically focused Ge(113). Ge(115) is also available to provide λ = 0.95 Å
Monochromator angle	$2\Theta_M$ = 52.0°
Wavelength	λ = 1.5 Å
Scattering angles	10° < 2Θ < 135°
Sample angles	0° < Ω < 135°
Collimations	Coarse oscillating collimator before the detector
Detector	Multiwire (624 anodes, 0.2° pitch) He^3 curved PSD
Resolution	2 mm spatial resolution

Status: Available to users

Applications

WAND is ideal for the study of time-resolved phenomena and for the study of diffuse scattering in single crystals. Research performed at WAND includes studies of the growth of ferroelectric ice-XI, hole and charge ordering in colossal magnetoresistance materials, and studies of magnetic structures and correlations in low-dimensional magnetic systems and other magnetic materials.

WAND is operated in collaboration with the Japan Atomic Energy Research Institute under the US/Japan Cooperative Program on Neutron Scattering Research.

For more information, contact

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HFIR

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