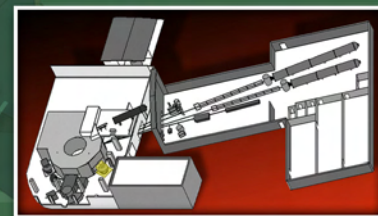


# INSTRUMENT

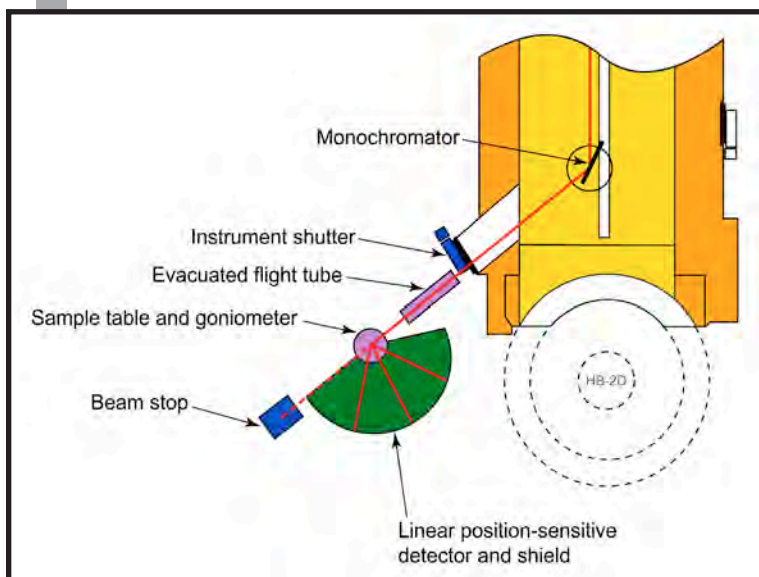
# HB-2C

BEAM LINE  
HIGH FLUX ISOTOPE REACTOR



## WAND – US/JAPAN WIDE-ANGLE NEUTRON DIFFRACTOMETER

The US/Japan WAND at the HFIR HB-2C beam tube 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  $^3\text{He}$  position-sensitive detector covering  $125^\circ$  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  $0.2^\circ$  pitch)  $^3\text{He}$  gas counter specially designed for this instrument. This detector has an intrinsic angular resolution of  $0.25^\circ$  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 $\lambda=0.95 \text{ \AA}$
Monochromator angle	$2\theta_M = 52.0^\circ$
Wavelength	$\lambda = 1.5 \text{ \AA}$
Scattering angles	$10^\circ < 2\theta < 135^\circ$
Sample angles	$0^\circ < \Omega < 135^\circ$
Detector	Multiwire (624 anodes, $0.2^\circ$ pitch) $^3\text{He}$ curved PSD

Status: Operational

### 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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[http://neutrons.ornl.gov/hfir\\_instrument\\_systems/HB-2C.shtml](http://neutrons.ornl.gov/hfir_instrument_systems/HB-2C.shtml)



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