

INSTRUMENT

BEAM LINE

1B

SPALLATION NEUTRON SOURCE

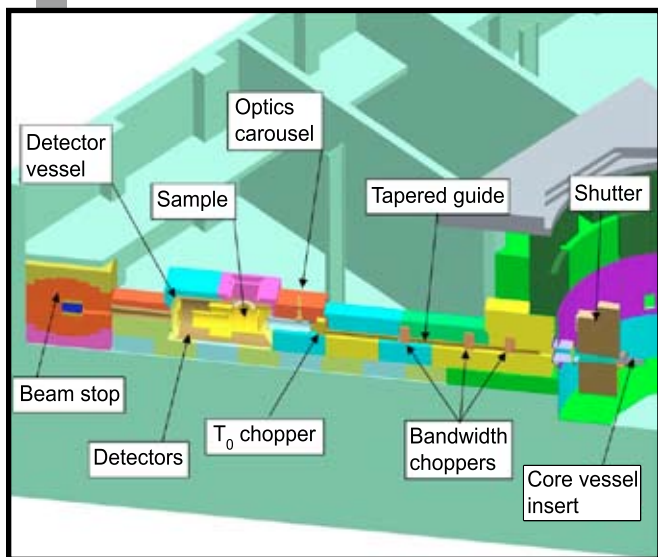
Fact Sheet



NOMAD – NANOSCALE-ORDERED MATERIALS DIFFRACTOMETER

NOMAD is a high-flux, medium-resolution diffractometer that uses a large bandwidth of neutron energies and extensive detector coverage to carry out structural determinations of local order in crystalline and amorphous materials. The instrument enables studies of a large variety of samples, ranging from liquids and solutions, glasses, and nanocrystalline materials to long-range-ordered crystals. The enhanced neutron flux at SNS, coupled

with the advanced neutron optics and detector features, allows for unprecedented access to high-resolution pair distribution functions, small-contrast isotope substitution experiments, small sample sizes, and parametric studies.



APPLICATIONS

- Environmental (e.g., solvent) effects on and direction of nanoscale structure formation
- In situ structural changes in nanoscale oxide catalysts used in automobile catalytic converters
- Structure of hydrogen storage materials under in situ conditions
- Transient structures of materials under extreme conditions (e.g., at high temperature or high pressure under the influence of transient fields or in metastable states)

SPECIFICATIONS

Moderator	Decoupled poisoned supercritical hydrogen
Moderator-to-sample distance	19.5 m
Sample-to-detector distance	0.5–3 m
Wavelength range	0.1–3 Å
Momentum transfer range	0.04–100 Å ⁻¹
Detector angular range	1–175° scattering angle
Detector coverage	~10.5 sr
Flux on sample	~1 x 10 ⁸ neutrons cm ⁻² sec ⁻¹

Status:

To be commissioned in 2010

FOR MORE INFORMATION, CONTACT

Instrument Scientist: Jörg Neufeind, neufeindjc@ornl.gov, 865.241.1635

http://neutrons.ornl.gov/instrument_systems/beamline_01b_nomad



May 2008