

INSTRUMENT

BEAM LINE

1B

SPALLATION NEUTRON SOURCE

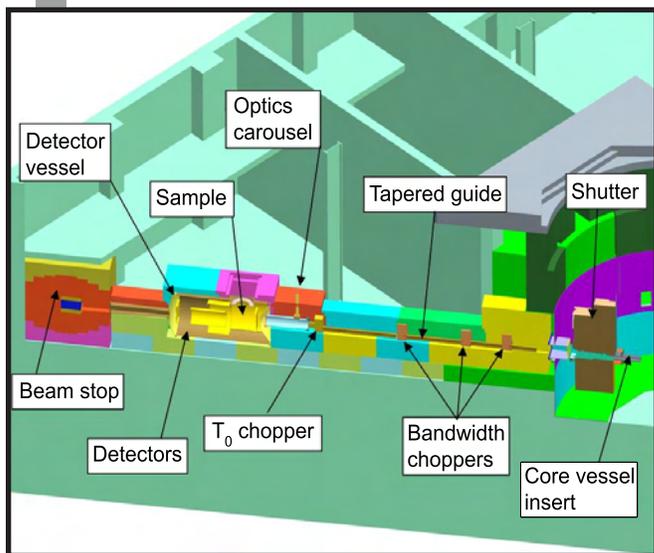
Fact Sheet



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.



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

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)

FOR MORE INFORMATION, CONTACT

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



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