Beamline 3-ID / SRI-CAT

Scientific focus: Synchrotron instrumentation and techniques, resonant and non-resonant inelastic scattering
Scientific programs: Nuclear resonant scattering (inelastic nuclear resonant scattering, lattice dynamics of thin films, amorphous materials, materials under high pressure, and vibrational properties of biomolecules), and inelastic x-ray scattering (momentum-resolved lattice dynamics)

Optics & Optical Performance

- Kohzu HLM-2 double-crystal monochromator
  diamond (111) nondispersive crystals
  water cooling

- high-resolution monochromator

energy	resolution
9.4 keV	2.3 meV
13.8 keV	6 meV
14.4 keV	5.5, 2, 0.85, and 0.66 meV
21.5 keV	1 meV
23.8 kev	3.5, 1, and 0.5 meV
25.6 keV	0.5 meV

- Zeiss mirror
  Zerodur substrate
  Pd coating
  two groove, collimating and horizontal focusing
  bendable for vertical focusing
  0.8 m length

- K-B focusing mirror

Experiment Stations

3-ID-A
- white beam first optics enclosure

3-ID-B
- monochromatic beam station
- x-ray optics development
- nuclear resonant scattering under high pressure

3-ID-C
- monochromatic beam station
- inelastic x-ray scattering

3-ID-D
- monochromatic beam station
- nuclear resonant scattering from biological systems
- cryo-cooled high-resolution monochromator

Detectors

- avalanche photodiodes
- PIN-diodes, Si, CdZnTe (Amptek)
- ionization chambers
- NaI
- Si(Li)

Beamline Controls and Data Acquisition

- VME-based motion control, EPICS software
- Graphical user interface: MEDM implemented on Sun workstations, Solaris operating system

Beamline Support Equipment/Facilities

- Kohzu high-angular resolution stages (12.5 nrad)
- 6-circle diffractometer
- optical tables
- Euler cradle
- misc. linear stages
- Oxford 7-T superconducting magnet/cryostat, Oxford microscope cryostat
- optical tables

Insertion Device Source Characteristics (nominal)

source	2.7 cm undulator
period	2.70 cm
length	4.5 m
effective K_{max} (at minimum gap = 8.5 mm)	2.18
energy range 1st harmonic	5.1 - 16.0 keV
energy range 1st - 5th harmonics	5.1 - 60.0 keV
on-axis peak brilliance at 7.9 keV	2.3×10^{19} ph/sec/mrad²/mm²/0.1%bw
source size at 8.0 keV Σ_x Σ_y	 359 μm 21 μm
source divergence at 8.0 keV $\Sigma_{x'}$ $\Sigma_{y'}$	 24 μrad 6.9 μrad