

# Beamline 17-ID / IMCA-CAT

**Scientific focus:** Pharmaceutical macromolecular crystallography

**Scientific programs:** Structures of protein- ligand complexes, *de novo* protein structures, drug design, protein engineering, and crystallographic methods development

## Optics & Optical Performance

- Daresbury double-crystal constant off-set monochromator
  - 28 m from source
  - 6–20 keV energy range Si(111)
  - $10^{-4}$  energy resolution ( $\Delta E/E$ ) at 10 keV
  - 35 mm offset below orbital plane
  - liquid-nitrogen cooling
- vertically focusing mirror under development
- $10^{12}$  ph/sec flux on  $100 \mu\text{m} \times 100 \mu\text{m}$  @ 12.4 keV

## Experiment Stations

### 17-ID-A

- white beam first optics enclosure

### 17-ID-B

- monochromatic beam station
- macromolecular crystallography
- 3.5 m x 7 m

## Detectors

- ADSC Quantum 210 CCD
- Bicron fluorescence detector

## Beamline Controls and Data Acquisition

- controls: Sun and Linux systems running EPICS with VME “MX” software (locally developed), running on UNIX
- data acquisition: proprietary software from Mar

## Beamline Support Equipment/Facilities

- 4° chill room in wet lab
- Oxford cryo-stream system
- user-accessible computers for data processing

## Insertion Device Source Characteristics (nominal)

source	Undulator A
period	3.30 cm
length	2.47 m
effective $K_{\text{max}}$ (at minimum gap = 10.5 mm)	2.78
energy range 1st harmonic	2.9 - 13.0 keV
energy range 1st - 5th harmonics	2.9 - 45.0 keV
on-axis peak brilliance at 6.5 keV	$9.6 \times 10^{18}$ ph/sec/mrad <sup>2</sup> /mm <sup>2</sup> /0.1% bw
source size at 8.0 keV $\sum_x$ $\sum_y$	359 $\mu\text{m}$ 21 $\mu\text{m}$
source divergence at 8.0 keV $\sum_{x'}$ $\sum_{y'}$	24 $\mu\text{rad}$ 6.9 $\mu\text{rad}$