

Australian Synchrotron – Bright Program



Australian Government

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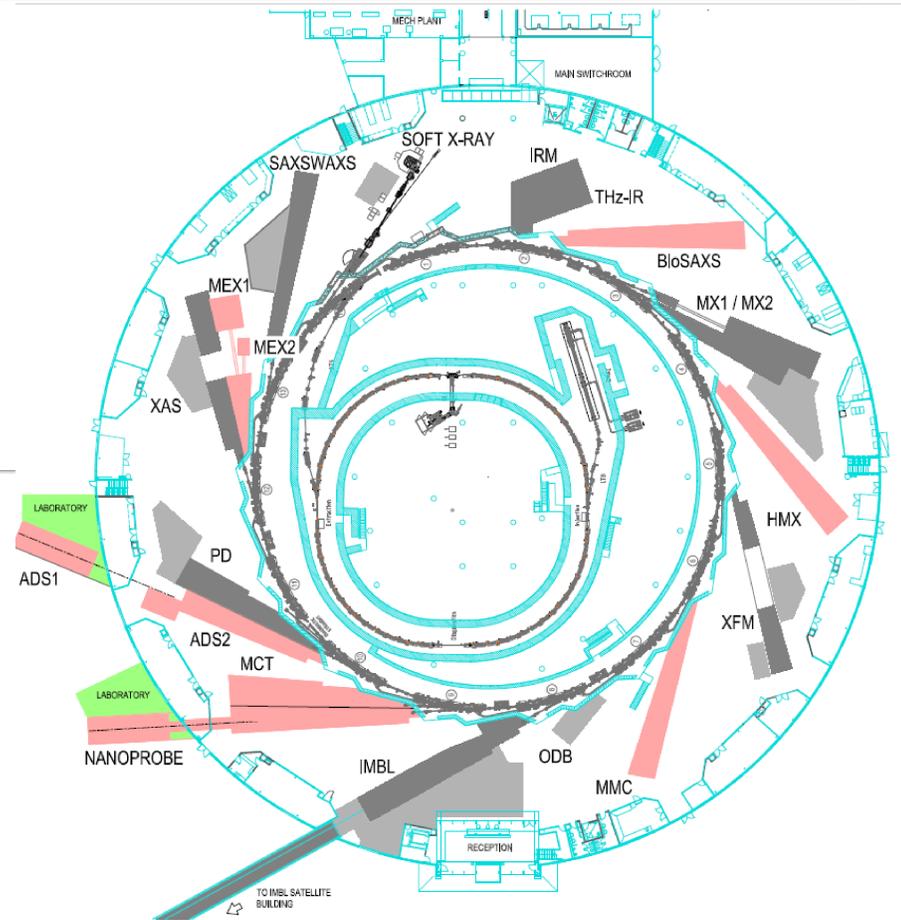
Since 2016, the Australian Synchrotron has been operated as part of the Australian Nuclear Science and Technology Organisation.

Summary

The Australian Synchrotron is entering its first major beamline build program since the completion of its original beamline construction phase which accompanied the construction of the facility. The Bright Program aims to construct 8 beamlines by 2014 with 2 beamlines having accompanying branchlines and supporting endstations. Conceptual designs of the first two beamlines are underway and are aimed at providing medium energy XAFS (MCT) and micro-computed tomographic imaging capability (MCT), both off bend magnet sources. Planning is well advanced for the following two beamlines with the start of conceptual engineering work expected to start in the second half of 2018.

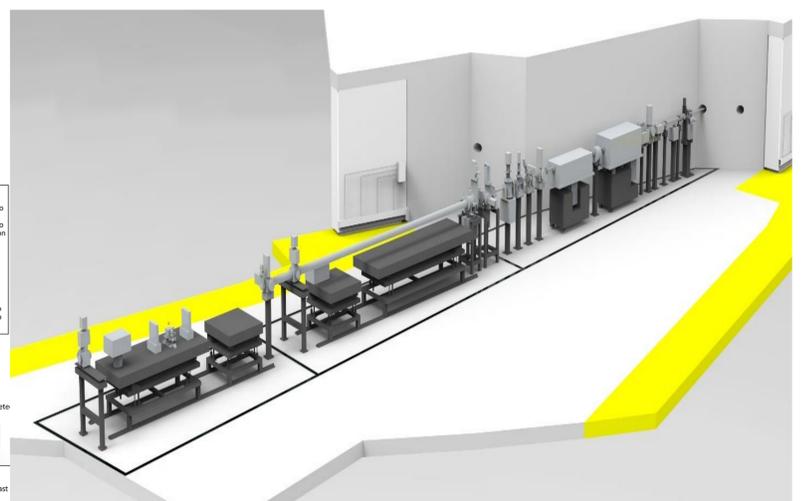
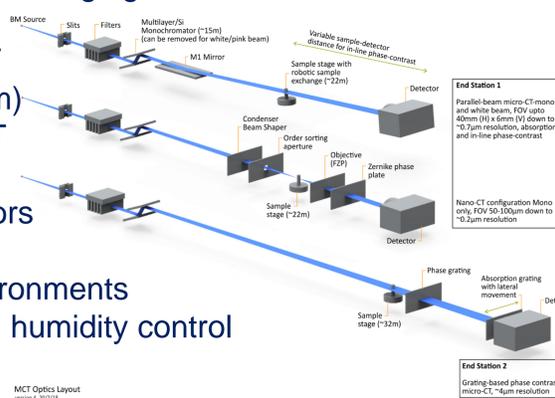
Bright Beamline Program

Beamline		Source
MCT	Micro Computed Tomography	Bend Magnet
MEX1 & 2	Medium Energy XAS	Bend Magnet
BioSAXS	Biological Small Angle X- Ray Scattering	IVU
ADS 1 & 2	Advanced Diffraction & Scattering	SCW
MX3	High Performance Crystallography	IVU
Nanoprobe	X Ray Fluorescence Nanoprobe	IVU
MMC	Micro Materials Characterisation	Bend Magnet



MCT Beamline

- High Speed X-ray and tomographic imaging
- 2 Endstations, 3 operating modes
 - Parallel beam micro CT
 - Nano CT (target <0.2um)
 - Grating based micro CT
- Automation of sampling handling
- Double layer DMM monochromators
- Beam pitch stability <150 nrad
- Provision for multiple sample environments
- Temp stability of +/- 0.5 degC with humidity control



MEX 1 & 2 Beamlines

- Medium Energy X-ray Absorption Spectroscopy
- Medium energy main beamline (MEX1), low energy branch line (MX2)
- Beamlines will operate simultaneously – splitter mirror in frontend required
- MEX2 will have an unshielded endstation – i.e. not be inside a hutch
- R&D of high res' crystal spectrometer requiring utilising Rowland geometry
- Microprobe K-B mirror required on MEX1
- Multiple sample environments
- Fe EXAFS flyscanning at ~1.2 deg/s
- XANES scanning at 1.6 deg/s
- Automated high energy XAS

