The Australian Synchrotron Imaging and Medical Beamline
Materials, animals and patients

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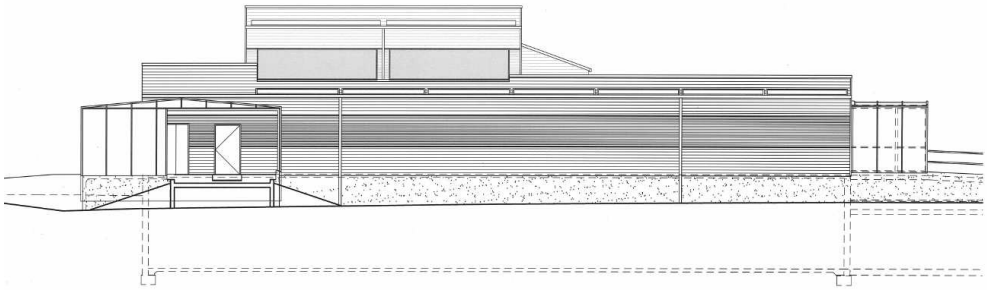
As a result of enthusiastic support from the Australian biomedical and materials science communities, the Australian Synchrotron is constructing a world-class facility for x-ray imaging and medical research. In phased build and commissioning since December 2008, the Imaging and Medical Beam Line (IMBL) will be available to users in the second half of 2011 when it will provide unrivalled x-ray beam qualities for imaging and radiotherapy research. Applications in the biomedical area include the study of diseases, treatments and physiological processes. In materials research, the IMBL will be able to image deep into large samples with high spatial and contrast resolution.

The beam line is equipped with three measurement enclosures with a maximum source to sample distance of 136m and will deliver a 60cm by 4cm x-ray beam – monochromatic and white – to a three storey satellite (SAT) building fully equipped for pre-clinical and clinical research. Currently operating with a 1.4 Tesla multi-pole wiggler, the IMBL will upgrade to a 4.2 Tesla superconducting device in 2012 to extend the x-ray energy range to 120keV. This new device will deliver in excess of 20kW of x-ray power to any point along the beam line and offers many challenges in beamline engineering.

This presentation will explain the technical capabilities of the beamline and the current status and planning for the entire facility. Examples of materials and biomedical research programs that will move to the IMBL in the coming years from other synchrotrons will be discussed.

The IMBL and SAT building with the Biomedical Imaging Consortium building (left)



Architectural drawing of the SAT building Phase II - West Elevation