The Centre for Accelerator Science at ANSTO

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In 2009, the Federal government provided funding of $25m to ANSTO through the Education Investment Fund, to build state-of-the-art applied accelerator science facilities, with the primary aim of providing world-leading accelerator mass spectrometry (AMS) and ion beam analysis (IBA) facilities. New buildings are now under construction and Building plans are now well advanced, and two new accelerators are on order with National Electrostatics Corporation, USA.

The 1MV AMS accelerator system is designed with the capability to perform high efficiency, high precision AMS analysis across the full mass range. Large beam-optical acceptance will ensure high quality and high throughput radiocarbon measurements. High mass resolution analyzers, at low and high energy, coupled to a novel fast isotope switching system, will enable high quality analysis of actinide radioisotopes.

The 6MV tandem accelerator will be instrumented with a wide range of AMS, IBA and ion irradiation facilities. The three ion sources include hydrogen and helium sources, and a MC-SNICS sputter source for solid materials. The AMS facility has end stations for (i) a gas-absorber detector for ^{10}Be analysis, (ii) a time-of-flight detector, (iii) a gas-filled magnet and (iv) a general use ionization detector suited to ^{36}Cl and other analyses. Initially, there will be four IBA beamlines, including a new ion beam microprobe currently on order with Oxford Microbeams. The other beamlines will include an on-line ion implanter, nuclear reaction analysis and elastic recoil detection analysis facilities. The beam hall layout allows for future expansion, including the possibility of porting the beam to the existing ANTARES beam hall for simultaneous irradiation experiments.

Two buildings are currently under construction, one for the new accelerators and the other for new chemistry laboratories for AMS and mass spectrometry facilities. The AMS chemistry labs are planned in two stages, with the new radiocarbon labs to come in the second phase of work.