

**The new SIRIUS accelerator system at ANSTO: Design, capabilities and recent applications for environment, radiation health physics, material modification and characterisation using accelerated heavy ions**

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The Centre for Accelerator Science (CAS) facility at ANSTO has recently been expanded with the new 6 MV SIRIUS accelerator system with multiple beamlines for Ion Beam Analysis and Accelerator Mass Spectrometry [1].

The beamlines, end-stations and data acquisition software for the accelerator mass spectrometry (AMS) were custom built by NEC for rare isotope mass spectrometry, while the beamlines with end-stations for the ion beam analysis (IBA) are largely custom designed at ANSTO using in-house expertise. An overview of the 6 MV system and its performance will be given with recent outputs in research fields of radiation health physics, materials modification and characterisation, environment and paleo-climate change.

[1] Z. Pastuovic, D. Button, D. Cohen, D. Fink, D. Garton, M. Hotchkis, M. Ionescu, S. Long, V. Levchenko, M. Mann, R. Siegele, A. Smith, K. Wilcken, SIRIUS - A new 6 MV accelerator system for IBA and AMS, *Nucl. Instr. Meth. Phys. Res. B* 371, 142 (2016). <http://dx.doi.org/10.1016/j.nimb.2015.09.047>.

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