

## **The 5U Pelletron accelerator facility at The University of Melbourne**

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The 5U Melbourne Pelletron is a single-ended National Electrostatics Corporation machine with three beamlines: the Melbourne microprobe, the CSIRO microprobe and an RBS/ion channeling line. Typical beams are He<sup>+</sup> or H<sup>+</sup> ions in the energy range 500 keV – 5.0 MeV. The accelerator facility is used for ion beam analysis and ion implantation. Analyses primarily utilise particle induced x-ray emission (PIXE), microbeam mapping and microanalysis, Rutherford backscattering spectrometry and ion channeling and nuclear reaction analysis. The accelerator supports the quantum computer development program of the Centre of Excellence for Quantum Computation and Communication Technology, diamond device and materials programs, SiC device and single photon source development and microanalyses related to mining and minerals exploration, botany and biosciences. A Maia x-ray pixel detector array has recently been installed on the CSIRO microbeam line. The detector array, with its large solid angle and parallel detection capability, enormously increases the microanalytical capabilities that are available. This presentation will provide an overview of the 5U Melbourne Pelletron facility and examples of recent analyses performed using the facility will be given to highlight the capabilities of the machine, the beamlines and accompanying instrumentation.