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Introduction of a new XRF microprobe at the Australian Synchrotron

Tuesday 16 September 2025 17:00 (1 hour)

Scanning X-ray fluorescence (XRF) microprobes (μProbe) provide element-specific, spatial associations between elements within heterogeneous, structured, and dynamic systems. A new scanning X-ray fluorescence (XRF) microprobe (μMEX) has been commissioned at the Medium Energy X-ray Absorption Spectroscopy beamline (MEX1) of the Australian Synchrotron. This offers X-ray microspectroscopy (μXANES) capabilities with a scan range of 100 x 100 mm, throughout an energy range of ˜2.1 −13.6 keV and with a spatial resolution or 3 −20 μm which is unique within the facility and uncommon worldwide. In early 2025, the μMEX successfully recorded its first sulphur μXANES (S K-edge, 2.472 keV) from a 2.5 μm-thick, thin-section of an individual wool fibre ˜35 μm in diameter. The low available flux at this bending magnet beamline coupled with the low energies (and corresponding low transmissivity) create significant engineering and optimisation challenges. Similarly, the broad selection of elements available to study, range of supported sample geometry and tight spatial constraints add to the design complexity.

Footnotes

Funding Agency

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