

Neutron Imaging: benefits and Case Studies in Palaeontology and Cultural Heritage

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Conventional and synchrotron-based X-ray computed tomography (XCT) have been utilised for many years as critical tools in uncovering 3-D internal and surface renderings of scientifically important fossils, cultural artefacts and other specimens held in museum and university collections. DINGO, Australia's thermal-neutron micro-computed tomography (nCT) instrument, is being used to obtain unprecedented renderings of extraordinary fossilised anatomical features not visible with conventional imaging techniques, and yielding new insights into ancient manufacturing methods of archaeological artefacts not attainable by other methods.

NCT is a complementary tool to XCT, and it is important to recognise the benefits, and challenges with its application. Using a selection of case studies from our instrument user program, this presentation will illustrate how neutrons are revealing soft-tissue remains in Jurassic stem-mammals, being used to identify touch-ups and fraud in palaeontology, and providing new insights into Cretaceous polar ecosystems. Through the ANSTO supported Cultural Heritage project, neutron imaging is being used to reveal ancient weapons manufacturing practices, reveal hidden texts in a lead scroll and identify the recycling of mummified votive offerings in ancient Egypt. Improvements in imaging technology and methods at ANSTO is enabling us to achieve higher throughput of these precious objects, minimise neutron-induced activation of samples and to support an increasing number and diversity of student-led research projects.

Speakers Gender

Male

Level of Expertise

Expert

Do you wish to take part in the poster slam

No

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