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Micro-Computed Tomography (MCT) beamline at ANSTO/Australian Synchrotron: A progress report

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The Micro-Computed Tomography (MCT) beamline is one of the first new beamlines to be constructed at the Australian Synchrotron as part of the BRIGHT program. MCT will complement the existing X-ray imaging/tomography capability provided by the Imaging and Medical Beamline (IMBL), and will target applications requiring higher (sub-micron) spatial resolution and involving smaller samples. MCT will be a bending-magnet beamline, operating in the 8 to 40 keV range, based on a double-multilayer monochromator. Filtered white and pink beams will also be available, the latter utilising a single-(vertical)bounce mirror. MCT will benefit from X-ray phase-contrast modalities (such as propagation-based, grating-based and speckle) in addition to conventional absorption contrast, and be equipped with a robotic stage for rapid sample exchange. A higher-resolution CT configuration based on the use of a Fresnel zone plate system will also be available. A number of sample environmental stages, such as for high temperature and the application of loads, are planned in collaboration with certain groups in the user community.

Anticipated application areas for non-destructive 3D sample characterisation include biomedical/health science, food, materials science, and palaeontology. This presentation will provide an update on the progress of the MCT project, including the procurement of three state-of-the-art X-ray detector systems, and the significant scientific-computing effort required to meet the demands of this high-performance imaging beamline.

Presenter Gender

Man

Do you wish to take part in the Student Poster Slam

Condition of submission

Yes

Students Only - Are you interested in AINSE student funding

Level of Expertise

Expert

Pronouns

He/Him

Which facility did you use for your research

Australian Synchrotron

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