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The Nanoprobe beamline at the Australian Synchrotron: towards day #1, July 2024

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A hard x-ray Nanoprobe beamline is under construction at the Australian Synchrotron, aiming to accept first users for operation in July, 2024. In this presentation we will outline the science case for the Nanoprobe along with the anticipated performance parameters and show examples of measurements that will be enabled by the facility. In particular, core methods supported by the Nanoprobe include: trace elemental mapping and spectroscopy at the 60-300 nm length-scale using x-ray fluorescence; absorption, differential phase contrast and ptychography using x-ray transmission, and; SAXS/WAXS and micro-diffraction.

A number of substantial challenges must be overcome in order to reach the ultimate resolution, and these will be described along with the optical and operational design of the beamline. Cryogenic capabilities may present too great a challenge for the first-generation implementation but are keenly desired and firmly on the instrument development curve. The Nanoprobe endstation instrument will be located within a purpose-built satellite building at around 100 m from the source location. Although still deep in design phase, we will outline the building design and welcome comment from future potential users of the beamline particularly with regards to the instrument capabilities and the experimental support that is required from the ancillary services within the building and the larger Australian Synchrotron facility.

Level of Expertise

Expert

Presenter Gender

Man

Pronouns

They/Them

Which facility did you use for your research

Australian Synchrotron

Students Only - Are you interested in AINSE student funding

Do you wish to take part in the Student Poster Slam

Condition of submission

Yes

Primary author(s) : SEMERARO, Michela (Australian Synchrotron); KEWISH, Cameron (Australian Synchrotron); AFSHAR, Nader (ANSTO, Australian Synchrotron); DE JONGE, Martin (ANSTO)

Presenter(s) : DE JONGE, Martin (ANSTO)

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