

# Small Angle Neutron Scattering Capability at the Australian Nuclear Science and Technology Organisation

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Small angle scattering is a technique that provides information about the size and overall shape of structures on the nanoscale. Although not a 'real space' technique such as microscopy, small angle scattering presents certain advantages over microscopy such as the ability to study molecules and their self-assembly in solution. Samples can then readily be studied under a range of conditions such as temperature, pH, pressure, application of shear etc...

Three world-class small angle neutron scattering (SANS) instruments are now located at the ANSTO Lucas Heights campus south of Sydney, covering space-scales from 1 nm to 10 microm [1-3]. A complementary bench top small angle X-ray instrument is also available [4]. All four instruments are accessible to the community via our user programme. We here outline the advantages and limitations of using SANS to study the nano to microstructure of materials, taking examples from recently published work.

[1] K. Wood, J. P. Mata, C. J. Garvey, C. M. Wu, ... and E. P. Gilbert, QUOKKA, the pinhole small-angle neutron scattering instrument at the OPAL Research Reactor, Australia: design, performance, operation and scientific highlights, *J Appl Crystallogr*, 2018, 51, 294-314.

[2] Rehm, C.; Campo, L. d.; Brûlé, A.; Darmann, F.; Bartsch, F.; Berry, A., Design and performance of the variable-wavelength Bonse-Hart ultra-small-angle neutron scattering diffractometer KOOKABURRA at ANSTO. *J Appl Crystallogr*, 2018, 51 (1), 1-8.

[3] A. Sokolova, A. E. Whitten, L. de Campo, J. Christoforidis, A. Eltobaji, J. Barnes, F. Darmann and A. Berry, Performance and characteristics of the BILBY time-of-flight small-angle neutron scattering instrument, *J Appl Crystallogr*, 2019, 52, 1-12.

[4] <https://archive.ansto.gov.au/ResearchHub/OurInfrastructure/ACNS/Facilities/Instruments/SAXS/BrukerSAXS/>

## Speakers Gender

Female

## Travel Funding

No

## Level of Expertise

Experienced Researcher

## Do you wish to take part in the poster slam

No

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