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Quokka, the Pinhole Small-Angle Neutron Scattering Instrument at ANSTO

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Quokka was the first SANS instrument to be in operation at the Australian research reactor, OPAL [1]. It is a 40 m pinhole instrument operating with a neutron velocity selector, an adjustable collimation system providing source-sample distances of up to 20 m and a two dimensional 1 m squared position-sensitive state-of-the-art detector, capable of measuring neutrons scattered from the sample over a secondary flight path of up to 20 m. Also offering incident beam polarization and analysis capability as well as lens focusing optics, Quokka has been designed as a general purpose SANS instrument with a large sample area, capable of accommodating a variety of sample environments. Some of these sample environments are, a Rapid Heat Quench Cell enabling a sample to be studied in situ following a thermal shock (-120°C to 220°C); The neutron Rapid Visco Analyser (nRVA) which enables SANS to be measured simultaneously with viscosity via an RVA – an instrument widely used within the food industry; In-situ Differential Scanning Calorimetry (DSC); A stopped flow cell, and RheoSANS.

In early 2021 Quokka achieved the milestone of 200 peer-reviewed publications in a variety of research fields. Here we cover some of the research highlights along with Quokka's performance and operation.

[1] K. Wood, J. P. Mata, C. J. Garvey, C. M. Wu, W. A. Hamilton, [...] 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.

Level of Expertise

Experienced Researcher

Presenter Gender

Woman

Pronouns

She/Her

Which facility did you use for your research

Australian Centre for Neutron Scattering

Students Only - Are you interested in AINSE student funding

Do you wish to take part in the Student Poster Slam

Condition of submission

Yes

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