



Small-angle Scattering Seminar Series

Organized by SAXS-SIG, Advanced Photon Source

A monthly seminar series, organized by Small Angle X-ray Scattering Special Interest Group (SAXS-SIG) at Advanced Photon Source, is focused on discussing, celebrating, and learning from new frontiers of science, research, and development based on small-angle scattering (SAS). This is a monthly seminar organized virtually over ZOOM where the speaker will be invited by SAXS-SIG. In order to join the seminar please subscribe to the small-angle mailing list here: <https://mailman.aps.anl.gov/mailman/listinfo/small-angle>

Upcoming Seminar

Date: Apr 27, 2022

Time: Wed, 3:00 PM (CST)

Speaker: Anna Sokolova

Institution: Australian Nuclear Science and Technology Organization (ANSTO)

Title: Small Angle (Neutron) Scattering Down Under

Abstract: Australian Nuclear Science and Technology Organization (ANSTO) successfully operates two sites, in Melbourne and Sydney. Mentioning SAXS instrument at the Australian Synchrotron, this presentation will focus on ACNS, which hosts two small angle neutron scattering instruments, Quokka [1] and Bilby [2], and an ultra-small angle scattering instrument Kookaburra [3]. Quokka is a monochromatic instrument equipped with a polarizer and focusing lenses. Bilby is Time-of-Flight instrument having a monochromatic option too. The design of Bilby opens the possibility to vary wavelength resolution in the wide range (from 4% to 30%) satisfying various scientists' requirements. Two arrays of position-sensitive detectors in combination with utilizing of wide wavelength range (from $\sim 2\text{\AA}$ to $\sim 20\text{\AA}$) provide the capability to collect scattering data of wide angular range without changing the



Anna Sokolova: Senior Instrument Scientist on Bilby, time-of-flight SANS instrument at ANSTO

experimental set-up. Kookaburra's design is based on a Bonse-Hart principle. Altogether, three instruments can cover Q (momentum of transfer) range from 1.8×10^{-5} to 1.8 \AA^{-1} , opening the possibility to study a massive range of materials. Each instrument has a range of sample environments allowing to collect data from the samples in the magnetic field, wide range of temperature, at the shear, and so on.

Another aim of this talk is to demonstrate the capabilities of our facilities studying hard and soft matter systems.

References

[1] "QUOKKA, the pinhole small-angle neutron scattering instrument at the OPAL Research Reactor, Australia: design, performance, operation and scientific highlights "

Wood, K et al, *J. Appl. Crystallography*, 51(2), p.294-314 (2018)

[2] "Performance and characteristics of the BILBY time-of-flight small-angle neutron scattering instrument", Sokolova A. et al, *J. Appl. Crystallography*, 52, p.1-12 (2019)

[3] "Design and performance of the variable-wavelength Bonse-Hart ultra-small-angle neutron scattering diffractometer KOOKABURRA at ANSTO" Rehm C. et al, *J. Appl. Crystallography*, 51(1), p.1-8 (2018)