International co-operation and collaboration in small-angle scattering – 11th canSAS meeting

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The 11th canSAS workshop was held in Freising, Germany between the 8th and 10th July 2019. These international meetings, promoting collective action for nomadic small-angle scatterers, have been taking place since 1998 and act as forums to catalyse co-operation amongst the SAS community in order to provide better facilities and equipment that is combined with reliable data interpretation and analysis. The meeting attracted over 60 participants from major neutron and X-ray laboratories, as well as manufacturers of SAXS equipment, and users from academia and industry. There was also a wide geographical spread with participants from Australia, Asia and North America joining European colleagues.

The workshop contained talks and poster discussions, but the majority of the workshop was devoted to parallel breakout sessions where particular current issues in SAS were discussed, ranging from multiple scattering to common sample environment interfaces. The breakout groups reported back to everyone and this was followed by general discussion so that the broad community could agree on future actions. This format helped to find some important links between topics and actions for various working groups. The diverse experience of attendees brought forward an equally broad range of discussion topics. Several themes that are relatively new to canSAS emerged from sessions that included grazing incidence scattering (GISAS) where there are needs for more quantitative analysis and for reference samples that allow for comparison between instruments and between techniques such as GISAXS and GISANS. There was extended discussion about various aspects of sample environment. Although there are clearly major differences between neutron and X-ray instruments in factors such as the size of beam and consequent needs for precision of alignment and the choice of window materials, there were several clear points of common interest. Control of equipment and interfacing to instrument programs is a good example and issues relating to control of rheometers received special attention, particularly during a visit to Anton Paar in Stuttgart on the day following the canSAS workshop. There is a clear trend to more complex sample environments with *in-situ* processing or complementary *in-situ* measurements. The need to store and to make available this additional ancillary data for combined analysis with the scattering results will require development of both software and standardised data formats. This extra material may, for example, consist of substantial amounts of optical spectroscopic data, mechanical, dielectric, rheological or other measurement data.

Another area of discussion was the increasing needs for outreach and dissemination. Previous work established the SAS portal (www.smallangle.org) in 2012 that aims to provide links to information for the SAS community. It is recognised that further work and redesign is required to make this more attractive and accessible. Specialists find links to description of analysis software very useful – this has been the most accessed page. On the other hand, a critical need was identified to make the significant amount of educational material findable, particularly for non-specialists from both academia and industry, using relevant science topics rather than SAS keywords. A wider variety of material, including the use of a broad range of communication media is desirable with the recognition that videos and recorded commentaries are very useful. There were several volunteers to join the group that develops and maintains this website. They are always keen to receive suggestions for improvements, corrections and news items that should be displayed.

Other topics that were covered included the identification and modelling of multiple scattering, development of NeXus and NXcanSAS data formats, and the challenges of data reduction from time-

of-flight SANS instruments. Fuller reports on the discussions can be found in the presentations and information on the wiki page (www.cansas.org/wgwiki/index.php/canSAS-XI). The broader community is very welcome to join this dialogue. Apart from talks and break-out sessions there were posters on several aspects of instrumentation, data analysis, and sample environments. These also stimulated lively discussion. Preceding the final general discussion session, some talks on current scientific challenges and presentation of new instrumentation provided additional food-for-thought on a range of topics. On the final afternoon a visit was made to the Maier-Leibnitz Centre in Garching to view the neutron instrumentation.

Picture 1. Participants at the 11th canSAS workshop.

Picture 2. Katie Weigandt (NIST) introducing the Sample Environment Breakout discussion topic during plenary session.

Picture 3. Adam Washington (ISIS, UK), Tim Snow (Diamond Light Source), James Doutch (ISIS), and Brian Pauw (BAM) discussing during break. (Photograph courtesy Andrew Jackson).