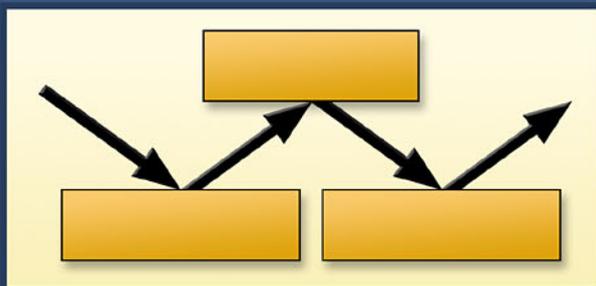


# The First Workshop of the International Consortium on Ultra-Small-Angle Scattering (IConUSAS)



## Keynote lectures will be given by:

- Dr. Michael Agamalian (ORNL, USA)
- Dr. Andrew Allen (NIST, USA)
- Dr. John Barker (NIST, USA)
- Dr. Willem Bertram (ANSTO, Australia)
- Dr. Kenneth Littrell (ANL, USA)
- Dr. Andrzej Radlinski (ANGSO, Australia)
- Prof. Dr. Helmut Rauch (Atominstitut, Austria)
- Prof. Dale Schaefer (University of Cincinnati, USA)
- Dr. Dietmar Schwahn (Juelich, Germany)
- Prof. Toshio Takahashi (University of Tokyo, Japan)
- Prof. Dr. Wolfgang Treimer (University of Applied Sciences (TFH) and HMI Berlin, Germany)
- Prof. Roberto Triolo (University of Palermo, Italy)
- Dr. George Wignall (ORNL, USA)

The main goal of the First Workshop of the International Consortium on Ultra-Small-Angle Scattering (IConUSAS) is to create a multilaboratory collaboration of scientific groups working on the development of contemporary X-ray and neutron Double-Crystal Diffractometers (DCDs), which are becoming increasingly popular for the study of the microstructure of condensed matter. Both based on the same Bense-Hart technique, they are complementary because of the opportunity to vary the contrast by changing the type of radiation. [More](#)

## Workshop Chair

Prof. Roberto Triolo (University of Palermo, Italy)

## Local Contacts

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Many years of USAXS technique development and recent progress in USANS instrumentation have resulted in capabilities far beyond those originally envisioned by Bonse and Hart. Contemporary synchrotron-based USAXS facilities are capable of delivering  $\sim 10^{13}$  photons per second on the sample under study, which increases the intensity dynamic range up to nine orders of magnitude. The reactor-based USANS instruments extend the lower limit of the Ultra-Small-angle range to  $Q_{\min} \sim 10^{-5} \text{ \AA}^{-1}$ , which is more than one order of magnitude smaller than the corresponding X-ray limit. Thus, from its origins as a highly specialized technique for measuring coarse microstructures in a few special cases, Bonse-Hart double-crystal USAS has truly come of age. Modern USAS measurements have joined the mainstream and are increasingly being found essential for microstructure and nanostructure characterization of hard and soft matter. In recognition of the growing need for USAS, now is the perfect time to call together the international community to celebrate how far we have come and to discuss opportunities for the future.

The USAS technique will be considered not only as an extension of conventional SAS to the range of smaller values of the scattering vectors but also as a new scientific field created at the intersection of dynamic diffraction and small-angle scattering. Recent progress in ultra-small-angle neutron scattering has initiated further exploration of this field; hence, now is an excellent time to assemble the IConUSAS community.

This workshop is also aimed at bringing together the international USAS users community. Thus, the best scientific results obtained with USAXS/USANS instruments will be presented. However, presentations on application of Bonse-Hart DCDs will not be restricted by studies of the super-atomic structure of liquids and solids. Reports will also include a discussion of "satellite applications" of these instruments (e.g., for the residual stress measurements in thin films).

Special attention will be paid to discussion of the newly built instruments and new projects related to the next generation of X-ray and neutron sources. Dramatic progress in the development of powerful, pulsed spallation neutron sources gives rise to a new generation of Bonse-Hart USANS instruments based on time-of-flight techniques (TOF-USANS). Development of these multiwavelength diffractometers, which are now at the stage of theoretical consideration, will extend the USANS range by an additional order of magnitude, allowing study of enormously large (up to several hundred microns) inhomogeneities in condensed matter.

Finally, an organizational session will also be held. This session will address leadership, sponsorship, publications, and other organizational matters, including discussion of how to increase cross-fertilization between USAXS and USANS development and follow-on meetings.