

Proceedings of the XIV International Conference on Small-Angle Scattering, SAS-2009

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PREFACE

The XIV International Conference on Small-Angle Scattering, SAS-2009, was held in Oxford UK, 13-18 September 2009, and was jointly organised under the auspices of the *International Union of Crystallography Commission on SAS* by a team from the Diamond Light Source and the ISIS Pulsed Neutron Source – their first such joint venture - with help from the UK Science & Technology Facilities Council. It was the first time that this long running and successful series of conferences on the application, science and technology of small-angle scattering techniques had been staged in the UK.

The UK has a proud heritage in small-angle scattering: as home to one of the world's first SANS instruments (at AERE Harwell), as the site of the world's first 2nd generation X-ray Synchrotron (the SRS at Daresbury with its suite of SAXS beamlines), and latterly as the location of the world's most successful pulsed source SANS instrument. Indeed, 2009 also marked the 25th Anniversary of neutron operations at ISIS and the opening of a Second Target Station. Whilst the SRS ceased operations in 2008, its mantle has been inherited by the Diamond synchrotron. Many delegates took the opportunity to visit both Diamond and ISIS during a conference excursion.

Despite the prevailing global economic downturn, we were delighted that 434 delegates from 32 different countries were able to attend SAS-2009; two-thirds were drawn from the UK, Germany, Japan, the USA and France, but there were also sizeable contingents from Australia, Korea, Taiwan and South America. In many ways this geographical spread reflects the present and emerging distribution, respectively, of 3rd generation X-ray synchrotrons and high-flux neutron sources, although the scope of the conference was not solely limited to these probes.

Financial support from the IUCr enabled us to grant bursaries to attend SAS-2009 to 12 delegates from emerging countries (Algeria, Argentina, Brazil, India, Nepal, Romania, Russia and the Ukraine).

The scientific heart of the conference comprised 10 plenary sessions, interspersed by 39 'themed' parallel sessions, 2 poster sessions, an afternoon tour of Diamond and ISIS, and a week-long exhibition. There were 144 contributed oral presentations and 308 poster presentations across a total of 21 themes. Over half of all presentations fell under 6 themes: biological systems, colloids and solutions, instrumentation, kinetic and time-resolved measurements, polymers, and surfaces and interfaces. The importance of SAS techniques to the study of biology, materials science and soft matter/nanoscience is clear.

The plenary presentations, which covered topics as diverse as advanced analysis techniques, biology, green chemistry, materials science and surfaces, were delivered by Frank Bates, *Minnesota, USA*, Peter Fratzl, *MPI Golm, Germany*, Buxing Han, *Beijing, China*, Julia Kornfield, *CIT, USA*, Jan Skov Pedersen, *Aarhus, Denmark*, Moonhor Ree, *Pohang, Korea*, Mitsuhiro Shibayama, *Tokyo, Japan*, Robert Thomas, *Oxford, UK*, Jill Trehwella, *Sydney, Australia*, and Thomas Zemb, *ICSM Bagnols, France*.

Instigated by representatives of the Belgian and Dutch SAS communities one parallel session was dedicated to a tribute for Michel Koch, the pioneer of so many novel applications of SAXS, who retired after 30 years at the EMBL Hamburg in late 2006. With a supporting cast that included Wim Bras, *ESRF, France*, Tony Ryan, *Sheffield, UK* and Joe Zaccai, *ILL, France*, and watched by former colleague André Gabriel, Michel treated the audience to a fascinating - and at times light-hearted - retrospective of the evolution of synchrotron SAXS.

Another parallel session was devoted to the work of the *canSAS* (Collective Action for Nomadic Small-Angle Scatterers) network of large-facility representatives and instrument scientists in areas such as data file formats, intensity calibration and software development. For further information see http://www.smallangles.net/wgwiki/index.php/canSAS_Working_Groups.

A total of nine awards were presented at the conference. The *Lifetime Achievement*, or ‘*Andre Guinier*’, *Award*, given to those who have made a sustained and recognised contribution to the development or application of Small-Angle Scattering, went to Vittorio Luzzati, Emeritus Research Scientist at the Centre de Génétique Moléculaire du CNRS, France. Dr Luzzati has had a long and distinguished career in X-ray scattering publishing over 170 research papers - 10 in *Nature* – which have so far accumulated over 3500 citations.

The award for ‘Excellence in SAS Technical/Instrumental Development’ went to J Polte, *BAM, Germany*, for ‘*New insights into nucleation and growth processes of gold nanoparticles derived via coupled in-situ methods*’. That for ‘Excellence in the Theoretical Development of SAS’ went to C Gommès, *Liege, Belgium*, for ‘*SAXS Data Analysis of Ordered and Disordered Morphologies with Gaussian Random Field Models*’. B Pauw, *Technical University, Denmark*, received the award for ‘Excellence in the Application of SAS’ for work on ‘*Strain-induced Internal Fibrillation of Aramid Filaments*’. And the award for ‘Excellence in the Communication of SAS Science’ went to J G Grossmann, *Liverpool, UK*, for his talk on ‘*Probing the Structure of Biological Macromolecules in the Gas Phase*’.

A Hexemer, *LBNL, USA*, won the prize for the ‘Best Poster in Technical/Instrumental Development’ for ‘*SAXS/WAXS using a Multilayer Monochromator*’. The prize for ‘Best Poster in Theoretical Development’ went to S Haas, *Helmholtz Centre Berlin, Germany*, for ‘*Simultaneous structure and chemical nano-analysis of an efficient frequency upconversion glass-ceramic by ASAXS*’. And in a remarkable ‘double’, the prizes for ‘Best Poster for Application in Life Sciences’ and ‘Best Poster for Application in Physical Sciences’ went to A Maerten and J Prass, respectively, both from *MPI Golm, Germany*, for their work on ‘*SAXS studies of human tooth dentine: analysis of a spatially inhomogeneous and varying bio-material*’ and ‘*Analysis of sorption strains in ordered mesoporous materials by in-situ small-angle x-ray diffraction*’.

The conference could not have been staged without the support and commitment of a large number of people and organizations, many of whom are listed separately within these Proceedings, and it is only right that we acknowledge their contribution. The generous financial support from our sponsors was particularly welcome given the economic climate. To all of them we offer our heartfelt and grateful thanks.

We would also like to thank our Guest Editor, Goran Ungar, his team of Section Editors, and the several dozen anonymous referees, for so admirably managing the scientific review of the manuscripts in these Proceedings, and Graham Douglas and Johanna Schwarz at IoP Publishing for their assistance in bringing these Proceedings to fruition.

Stephen King
Nicholas Terrill
SAS-2009 Co-Chairmen & Local Organisers

SAS-2012 will be held in Sydney, Australia, 18-23 November 2012.

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Anton-Paar, Advance Design Consulting, Advent Research Materials, ANSTO, Australian Synchrotron, Bruker-AXS, ESRF, ILL, Hecus, Helmholtz-Zentrum Berlin, Kurt J Lesker, Mirrortron, *Neutron News*, Rayonix, *Synchrotron Radiation News* and *Soft Matter*. There were also exhibits by Diamond, ISIS and the IUCr.

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