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Synchrotron Radiation and Polymer Science IV

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Synchrotron Radiation and Polymer Science IV

The fourth meeting on the use of Synchrotron Radiation in Polymer Science (SRPS) was held in Rolduc Abbey, the Netherlands, from September 8 to 11, 2009. This was a continuation of a topical series that was started by H.G. Zachmann, one of the pioneers of the use of synchrotron radiation techniques in polymer science. Earlier meetings were held in Hamburg (1995), Sheffield (2002), and Kyoto (2006). The meeting was organized as a satellite to SAS 2009, which took place the following week in Oxford. The meeting was co-organized by the polymer groups of Leuven University (Belgium) and Eindhoven University of Technology (Netherlands), as well as the DUBBLE beam line (ESRF/NWO/FWO).

There were about 80 attendees with, in the light of the present economic situation, a surprisingly large contingent from Asia and the United States. A quick survey showed that the attendees represented users from all major synchrotron labs with many being active in several facilities.

The meeting was opened by Tony Ryan (Sheffield University), who in his well-known, lively style entertained the audience with the tales of the construction of a rather elaborate "chemical" factory on the beamline in order to create a sample environment with a cyclic pH that was used to drive a "synthetic muscle."

A relatively large session was dedicated to the classical application of X-ray scattering techniques to problems in polymer science. Among the speakers was Julia Kornfield (Caltech), who managed to overcome the problem of the non-effectiveness of laser pointers on backlit screens by enthusiastically running and jumping in front of the screen to point out the relevant features in her slides dealing with flow-induced crystallization. She was followed by several other speakers highlighting different aspects of this very relevant field.

In contrast to earlier meetings, which were dominated by the use of hard X-ray scattering methods, this time it was decided to emphasize less well-known techniques, which were mainly based upon the use of soft X-rays. Even though soft X-rays are difficult to generate in a conventional laboratory and therefore have attracted a small number of polymer researchers so far, the field is expanding at the moment due to the higher efficiency of the beamlines that are available and the increase in the number of beamlines on emerging sources.

Attendees at Synchrotron Radiation and Polymer Science IV, held in Rolduc Abbey, the Netherlands.

For many in the audience this indeed served as an introduction to new aspects of polymer science and synchrotron radiation. Harald Ade (North Carolina State University) showed what one can do when one has at his disposal wavelengths that are within the range where the absorption edges relevant in soft condensed matter come into play. STXM results from the Swiss Light Source were shown by Rainer Fink (Friedrich-Alexander Universität Erlangen-Nürnberg), and how a similar instrument cannot only be used as a microscope but also as a manufacturing tool was discussed by Adam Leontowich (McMaster University). Further examples of techniques using softer X-rays were given by Hsiao-Chi Lu (XPS), Lynn Loo (NEXAFS), Giuseppe Portale (soft X-ray chemical contrast scattering), and Gary Ellis (IR microscopy). In all, there were 36 presentations and a very well-attended poster session, which was the site of several lively discussions, possibly aided by the fact that the drinks were free, courtesy of Linkam Scientific Instruments.

Alex Hexemer (ALS) and Mike Toney (SSRL) have offered to host the fifth SRPS in San Francisco in 2012 as a collaborative effort between the ALS and SSRL. ■

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