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PSI hosts 2nd Workshop on Sample Environment

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In 1995 the ENSA started an initiative to collect information on the various instrumentations available at European neutron scattering centers which, in 1997, was extended to data acquisition, neutron optics and sample environment. The latter topic was proposed to be co-ordinated by HMI. Starting with the collection of database material on sample environment equipment used at the ENSA centers, more shared activities like standardization of equipment (Orange cryostats, pressure cells), documentation techniques (catalogues, internet platforms), staff training (exchange with other centers) and regular workshops were planned. The first workshop, entitled "New Techniques and Developments for Sample Environment at Neutron Scattering Research Facilities" was held at the Hahn-Meitner-Institut in Berlin, Germany in April 1999. At this meeting, the creation of a platform for scientists and engineers specialized on sample environment techniques for neutron scattering experiments was successfully started.

This year, from April 5-6, the second workshop was organized by the Paul Scherrer-Institute in Villigen, Switzerland and was financially supported by Neutron Round Table, a Concerted Action of ENSA Initiative. The meeting was attended by 27 participants from 8 countries, combining members of sample environment groups from 8 European facilities (GKSS, FRM, HMI, ILL, ISIS, JINR, PSI, PTB) and from 4 North-American neutron scattering centers (IPNS, NIST, SNS, CRL). In addition, staff and guest scientists from PSI visited some of the 15 talks given by the participants during the course of the two days. In return, the PSI staff provided an experimental tour through the new SLS synchrotron facility and the two SING experimental halls, where – at the end – the experts were allowed to put hands on Markus Zollikers sample environment equipment.

The seminar sessions started with the opening remarks by Walter Fischer, Head of Department "Condensed Matter Research with Neutrons" at PSI, who introduced to neutron instrumentation at SING and then focused on the recent implementation of the Risø National Laboratory instruments and sample environment equipment. In a majority of 8 talks recent developments and projects with low temperature equipment was presented: Ben van den Brandt (PSI) reported on the in-house developed dilution fridge cryostat, Peter Smeibidl (HMI) on new magnetic cooling systems, Richard Down (ISIS) on ULT instrument performance, Jürgen Peters (FRM), Frederic Thomas (ILL) and Louis Santodonato (SNS) on pulse tube and closed cycle refrigerator based cryogenic systems, Michael Meissner (HMI) and Daniel Dender (NIST) on their experience with superconducting magnets at high fields. Reports on ambient and high temperature equipment (some designed for high resolution temperature control) were given by Ken

Volin (IPNS), Gerhard Kozik (GKSS), Robert Hammond and Mike Watson (CRL). In addition, Chris Goodway presented a poster on the status of high temperature furnaces at ISIS. Finally, Ravil Sadykov from the Institute for High Pressure Physics (RAS Moscow) reported on clamped pressure cells up to 18 kbar, which operate at PSI.

As an up-to-date item, remote control of sample environment was presented by Volker Wagner and Frank Kaufmann (PTB) and Markus Zolliker (PSI). More specific, the present status of modern temperature controllers in operation at the various centers became an interesting topic at the final round-table discussion. As a result it was agreed that at present commercial devices cannot fit all the needs of thermometry at the centers (due to the large number of thermometers in use with individual calibrations, for instance). In a short contribution Paul Dagleish (ILL) reported on his survey with the low-cost industrial Eurotherm controller which can be custom-programmed to the needs of temperature control with the ILL-Orange cryostats.

In his closing remarks Michael Meissner pointed out that the success of the workshop is due to the fact that technicians, engineers and scientists come together for international collaboration and exchange of ideas in this specialized field. For instrumentation the meeting has shown that in the new centers (FRM, SNS) future low temperature equipment will be "cryogenic liquid free", i.e. will operate on electrically driven apparatus, only. For documentation it is important to extend internet applications like user information on specific equipment or visualization of remote data and control – both, the staff and the user community will benefit from direct access to the most recent developments. Last but not least: the workshop at PSI was perfectly organized by Markus Zolliker and Renate Becher, the workshop secretary. The participants have to thank PSI for the scientific and the gastronomic hospitality and the sample environment community is looking forward to meet for the 3rd workshop in 2003.



No pain - no gain ! Participants of the workshop followed attentively the talks on theoretical aspects of sample environment.



Ton Konter (PSI) demystifies the secrets of the dilution refrigerators at SINQ.