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SIG: Instruments and Experimental Techniques (IET SIG6)

Reported Period: 2008-2009

Report Date: 25-06-2009

Reported by: Jean-Louis Hodeau

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1. Introduction.

The aim of the Commission is to promote access and awareness of crystallographers to new *Instruments and Experimental Techniques*. A special focus was on those who use synchrotron-radiation (SR) and neutrons. Main activities for the Commission in 2008-9 have been support for conferences, schools and ECM-25 Meeting.

2. Past Activities.

Our supports for instrumentations and methods for crystallography is particularly important for all developments associated to an innovative use of SR, FEL and neutrons. During the end of year 2008, because of the XXI IUCr Congress in Osaka, our activity has been partially reduced since the SIG6 is not officially involved the IUCr program, nevertheless we were involved in IUCr program via Prof. Gernot Heger, ex-officio member of the Osaka Programme Committee and via Synchrotron Radiation and Neutron propositions. Even if SIG6 input was informal on this occasion, many sessions reflect the “*Instruments and Experimental Techniques*” interests. Several members were also involved to the Osaka Congress as chairs, co-chairs or invited speakers. In the 2008-2009 period, SIG6 members has organized or are organizing several schools and workshops. We were involved in the organization of several microsymbosia at the ECM-25 Istanbul 2009.

Workshops, and courses co-organized by SIG6 members to promote Instrumentation and methods include:

Title: ECM25 Microsymbosia & Keynotes

IET-SIG6 made a significant contribution to the Programme for the Istanbul ECM25 in 2009. We proposed and organized or co-organised with other SIG the following Microsymbosia.

KEYNOTES

- Complementarity of Magnetic Neutron and X-ray Scattering
Lecturer: Thomas Brückel ; Chair: Dincer Ulku

MICROSYMPOSIA

- FA5-MS3 Remote Experimentation , Telepresence and Automation
Chair: Simon Coles ; Co-chair : Roberto Pugliese
- FA2-MS 8 Coherent X-Ray diffraction and Imaging of materials
Chair: Sylvain Ravy ; Co-chair: Bob Cernik
- FA2-MS6 Surfaces and Interfaces
Chair: Wolfgang Donner ; Co-chair: Mustafa Oksuzoglu
- FA5-MS 4 Synchrotron Radiation based Crystallography & Spectroscopy in Middle East
Chair : Samar Hasnain ; Co-chair : Engin Ozdas
- FA2-MS 9 Combination of Synchrotron and Neutrons in Magnetic Materials
Chair: Markus Braden ; Co-chair: Yalcin Elerman
- FA2-MS 3 Crystallography in Art and Archaeology
Chair : Eric Doryhee ; Co-chair: Petr Bezdicka
- FA1-MS 1 Coherent X-ray Diffraction and Imaging in Biology
Chair : Tim Salditt; Co-chair : Edgar Weckert
- FA3-MS 4 Time Dependent and In-situ Analysis
Chair: Poul Norby ; Co-chair: Anatoliy Senyshyn

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Title: ECM25 Erwin Felix Lewy Bertaut Prize

In 2007, following suggestion of SIG member, the Erwin Felix Lewy Bertaut Prize was created by the European Crystallographic Association (ECA) and the European Neutron Scattering Association (ENSA) to young European scientists in recognition of notable experimental, theoretical or methodological contributions in the field of the investigation of matter using crystallographic or neutron-scattering methods. In 2009, the Prize will be attributed at the ECM25-Istanbul conference. At this occasion a poster dedicated on the memory of Erwin Felix Lewy Bertaut Prize will be presented.

Title: ECM25 Jacek Grochowski SIG6 poster prize

Sponsors/Organizers: SIG6/University of Manchester and Daresbury SRS: 794 GBP, ie approx 1200 Euros (100 Euros per prize per ECM). This prize for the best "Instrumentation & Experimental Techniques" poster will be given at ECM25 in memory of Prof Jacek Grochowski who was greatly involved in SIG6 and in ECA.

Title: PD2DD, International Workshop on Powder Diffraction with 2-D Detectors

26-27 February, 2008, Grenoble, France,

Chairs : Juan Rodriguez-Carvajal, Henry Fischer, Veijo Honkimaki

Title: ICCBM 12, 12th International Conference on the Crystallization of Biological Macromolecules

6-9th of May 2008, Cancun, Mexico

The conference was preceded by an associated crystallization workshop

Chair: Prof. A. Moreno, Prof. Naomi Chayen gave a plenary lecture and other ECA members taught on the workshop

Title: French school on Reflectivity SAXS, GISAXS & Diffraction from Surfaces

4 May 2008-8 May 2008 , Presqu'île de Giens, France

Chairs: A. Gibaud, R. Lazzari & J. Daillant

Title: Workshop - Simultaneous Raman-X-ray diffraction/absorption studies

18 June 2008-19 June 2008, ESRF Grenoble France

Organized by wouter@esrf.fr

This SNBL Workshop was on simultaneous Raman-X-ray diffraction/absorption studies for the *in situ* investigation of solid state transformations and reactions at non ambient conditions.

Title: Protein Crystallography Europe

19-20 June 2008, Amsterdam The Netherlands

This conference presents (i) Protein Crystallography Europe Protein Chemistry and Crystallization (ii) New Laboratory Instrumentation and Techniques (iii) Advances in Diffraction Techniques and Crystallographic Computing and (iv) New Drug Target Structures and their Analysis

Prof. Naomi Chayen gave a keynote lecture and ran a crystallization course

Title: Surface X-ray and Neutron Scattering, SXNS10

2 July 2008-5 July 2008, Paris France

Chairs: Philippe Mangin & Michèle Sauvage

This workshop brings together researchers studying surfaces and interfaces of solid, liquid, biological and soft matter via neutron or x-ray (either hard, soft, or EUV) scattering techniques.

Title: 12th JCNS & 13th JCNS Laboratory Course - Neutron Scattering

1 -12 September 2008 Jülich/Garching Germany and

7-18 September 2009 Jülich/Garching – Germany.

These courses were organized by Forschungszentrum Jülich in cooperation with RWTH Aachen and WWU Münster. They consist of lectures and an experimental section. The lectures will encompass an

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introduction to neutron sources, into scattering theory and instrumentation. Furthermore, selected topics of condensed matter research will be presented. The course gives a realistic insight into the experimental technique neutron scattering and its scientific power.

Chairs : T. Brückel, G. Heger, D. Richter, R. Zorn

Title: FEBS Advanced Courses 2008

3-8th October 2008, Nove Hradý Czech Republic

The crystallization of biological macromolecules is still poorly understood and success of the common trial-and-error experiments is not predictable. On the other hand, more rational approaches have been developed in the past few years and prospects for the science of crystallogenesis are in fact good. Many of the new approaches are based on an improved theoretical insight into the processes of nucleation and crystal growth. This course was intended for undergraduate (5th year) and postgraduate students and postdocs with an interest in macromolecular crystallization. The course will consist of theoretical lectures, seminars as well as practical work and demonstrations.

Lectures and practicals by Prof Naomi Chayen and many ECA members

Title: UK Synchrotron Radiation User Meeting 2008

11 September 2008-12 September 2008 Warrington United Kingdom

The objectives of this meeting are to bring together the community of users of synchrotron radiation, to act as a showcase for the best SR and FEL studies being carried out by the UK community.

Chair: Prof. Bob Cernik

Title: 2nd ILL Annual School on Advanced Neutron Diffraction Data Treatment using the FullProf Suite

26 January 2009-30 January 2009 ILL, Grenoble France

These intensive, hands-on, schools are focus on the analysis of diffraction data with the FULLPROF SUITE and concern heterogeneous data coming from powders, single crystals, X-rays and time-of-flight neutron diffraction. FPSchool-2009 will focus on the analysis of magnetic diffraction data: symmetry analysis, magnetic structure determination by simulated annealing, refinement of magnetic data as a function of temperature and refinement of single crystal data. It take place at the Institut Laue-Langevin and was open to 25 participants.

Chair: J. Rodríguez-Carvajal; Co-chairs: M-H Lemée-Cailleau, G Cuello

Title: XTOP2008 - 9th Conf. on High Resolution X-Ray Diffraction & Imaging

15 September 2008-19 September 2008 Linz Austria

XTOP bring together scientists from the fields of x-ray diffractometry, coherent and conventional x-ray diffraction imaging and topography, as well as x-ray phase contrast imaging (radiography and microtomography). XTOP is thus one of the central scientific platforms concerning methods and instrumentation in synchrotron-based high-resolution x-ray diffraction methods, phase contrast imaging, and microtomography.

Members involved: J. Baruchel, T. Baumbach

Title: Second International School on Biological Crystallization

18 May 2009-22 May 2009 Granada Spain

This International School will focus on the fundamentals of crystallisation from solutions and its applications to the field of the crystallisation of biological materials. The School will provide five days of lectures and practical demonstrations related to the crystallisation of biological macromolecules, biominerals and biomimetic materials, with one full day devoted to case studies on the crystallisation of membrane proteins and large macromolecular complexes.

Chair: J.M. Garcia-Ruiz

Title: HERCULES Course in Neutron and Synchrotron Radiation for Condensed Matter Studies www.aaa.com

1 March 2009-4 April 2009 Grenoble France

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This five week course is designed to provide training for students, postdoctoral and senior scientists from European and non-European universities and laboratories, in the field of Neutron and Synchrotron Radiation for condensed matter studies (Biology, Chemistry, Physics, Materials Science, Geosciences, Industrial applications). It includes lectures, practicals and tutorials. It is a European school largely dedicated on methods and instrumentations using Synchrotron and Neutrons,

Number of Participants: 83 students,

Chairs: J. Baruchel, D. Bellet, O. Isnard, J.L. Hodeau and several SIG#6 lecturers Kahn R., Rodriguez-Carvajal J., Baumbach T., Heger G.

Title: HERCULES Hercules Specialised Course (HSC11) on "Application of Neutron and Synchrotron Radiation to Magnetism" www.aaa.com

16 to 20 November 2009 Grenoble France

Since the 1940s, neutron scattering has been an essential tool for the investigation of magnetic structures and dynamics. More recently, the intensity and flexibility of synchrotron radiation has been exploited for application to research in magnetism. Developments in instrumentation and techniques mean that the two forms of radiation can be used to give complementary detailed information never seen before.

3. Future/Programmed Activities.

Input to ECM26- Darmstadt (Germany), we also encouraged SIG members to organize workshop and schools on development of instrumentation even if such events are not officially ECA school. .

4. Other matters, none

5. Five year 'overview', see report (2004-2008)

6. Estimated number of active formal members:

It has increased from 5 to about 10

John R. Helliwell (UK), Ake Kvik (S), Garcia Granda S. (SP), Kahn Richard (F), Saridakis Emmanuel (GR), Rodriguez-Carvajal Juan (F), Baumbach Tilo (D), Cernik Robert (UK), Heger Gernot (D) , Naomi Chayen (UK), J-L Hodeau (F)

7. List SIG officers, name and e-mail, and specify their main function in the SIG:

Secretary : Heger Gernot (D) "Heger Gernot" <heger@xtal.rwth-aachen.de>

Vice-Chair : Naomi Chayen (UK), "Naomi Chayen" <n.chayen@imperial.ac.uk>

Chair : J-L Hodeau (F) "Hodeau jean Louis" <hodeau@grenoble.cnrs.fr>

Supplementary Material, none

NOTE: DO NOT FORGET TO SEND THE UPDATED LIST OF YOUR SIG OFFICERS

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