

## **SIG12: Crystallography of Functional Materials**

**Reported Period: 2012-2013**

**Report Date: 15/05/2013**

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### **1. Introduction. (50 words max.)**

The present SIG 12 officers were re-elected for a 3-year term at the SIG12 meeting last August in Bergen. The main activities of the SIG team have been to prepare the Warwick ECM and to participate in the organization of various materials-science related meetings.

### **2. SIG web site:**

SIG12: in construction

### **3. Number of ECA individual members registered with the SIG according to (<http://www.xray.cz/eca/im-payment.htm>)**

SIG12 Materials Science 202 (on 15/05/2013)

### **4. Existence of a SIG mailing list: yes**

**Address of the mailing list:** [ecasig12@uhp-nancy.fr](mailto:ecasig12@uhp-nancy.fr)

**Number of members in the SIG mailing list: 27**

### **5. Approximate total number of researchers involved in the SIG (please indicate the basis for the estimate)**

About 220 based on 3. and 4.

### **6. List of MS organized by the SIG at the last ECM**

Title: ECM27 Bergen

SIG12 proposed and organized or co-organized two microsymposia for ECM27 in Bergen: "Ferroic and multiferroic materials" and "Materials in operando and in situ crystallography of materials". SIG12I also co-proposed 4 microsymposia organized with other SIGs: "Energy related materials", "Aperiodic, short-range ordered, and non-crystalline materials at ambient and non-ambient conditions", "Electron Crystallography on functional materials" and "Structural complexity of minerals and inorganic materials". All these microsymposia were highly successful and very well attended.

Title: Satellite workshop of the 27<sup>th</sup> European Crystallographic Meeting "Methods of high-pressure single-crystal x-ray diffraction" (Bergen, August 4-5, 2012)

Number of Participants: 50

Level of involvement of SIG in the activity:

ECA Individual Members registered with the SIG involved in the organizing committee

ECA Individual Members registered with the SIG involved as lecturers

endorsed Sponsored by ECA? **Yes**

Other Sponsors/Organizers:

Agilent Technologies, Stoe, Bruker, Incoatec, Scimed, Almax Industries, European Mineralogical Union

Short Description: (50 words max.)

The aim of this workshop was to demonstrate how to perform high-pressure single-crystal x-ray measurements in diamond anvil cells using home-laboratory and synchrotron facilities. The workshop included both lectures and hands-on exercises. It was aimed at researchers at all levels in physics, chemistry, biology, geosciences, and materials science.

## **7. Prizes sponsored/coordinated**

Umicore no longer wanted to sponsor the SIG12 poster prize in 2012; however, STOE has agreed to sponsor a poster prize in the field of the crystallography of functional materials at ECM28 in Warwick.

## **8. Past Activities other than Microsymposia at ECM**

21ièmes Journées de la diffusion neutronique – JDN-21 (Sète, France)

Members of SIG12 are part of the organizing committee of the French national neutron scattering conference in June 2013. A particular focus of the meeting is on the use of neutrons to investigate energy-related materials.

## **9. Future/Programmed Activities.**

Title: ECM28 Warwick

SIG12 is the principal organizer of the following microsymposia:

1. MS34 Thin films (with SIG 6)
2. MS35 Magnetic materials and in situ studies under magnetic fields (with SIGs 6 and 11)
3. MS36 Twinning, polytypes and modular structures (with SIG3)

SIG12 will co-organize of the following microsymposia proposed by other SIGs:

1. MS32 Structural studies at extreme conditions by single crystal X-ray diffraction (SIG 11)
2. MS18 From nature to laboratory: crystallography of minerals and mineral-related materials (SIGs 5 and 11)
3. MS20 Crystal physics of minerals and materials at variable pressures and temperatures (SIGs 5 and 11)
4. MS19 Heavy crystals: structural crystallography of heavy-element compounds (SIGs 5 and 11)

Title: Workshop “Frontiers of Crystallography” (Novosibirsk State University, October 2-6, 2013)  
SIG12 will contribute to the programme of this workshop on the latest advancements in high-pressure single-crystal diffraction as a continuation of the two ECM satellite workshops in Darmstadt and Bergen  
([http://km.igm.nsc.ru/index.php?option=com\\_content&task=view&id=52&Itemid=87](http://km.igm.nsc.ru/index.php?option=com_content&task=view&id=52&Itemid=87)).

Title: VI<sup>th</sup> AUSE National Conference and I<sup>st</sup> ALBA Users’ Meeting  
Place: ALBA Maxwell auditorium. Bellaterra Campus. Cerdanyola del Valles. Barcelona  
Dates: Tuesday-3 to Friday-6, September 2013

The VI<sup>th</sup> Meeting of the Spanish Association of Synchrotron Radiation Users (AUSE) will held in Barcelona from 3 to 6 of September 2013. Registering and abstract submission is already open (<http://auseweb.wordpress.com> and <http://www.cells.es>).

The SIG members involved in the event will participate as lecturers and members of the organizing committee. The meeting will not be sponsored by ECA. The main sponsors are the Spanish Scientific Research Council (CSIC), AUSE (Spanish Users of Synchrotron Radiation), ALBA synchrotron and the Spanish Ministry of Economy and Competitiveness (MEC).

**10. Other matters.** (50 words max.)

SIG 12 officers are actively involved in the conception, realisation and use of experimental stations and new sample environments at large scale facilities (e.g., ALBA in Barcelona, Petra-III in Hamburg, FRM-II in Munich and ESRF and ILL in Grenoble, Soleil in Paris) to open new possibilities for the structural investigation of functional materials under *in situ* and *in operando* conditions. ALBA is currently in operation mode and users are already performing experiments in different areas of soft and hard Materials Science.

**11. Brief annual activity report** (100 words max.)

SIG 12 is strongly involved in the organization of materials science related microsymbiosia at the Warwick meeting. SIG officers are also involved in the organization of workshops related to materials crystallography at material science and diffraction-related meetings. The members of SIG 12 strongly participate in the development of methods at large scale facilities (e.g. at synchrotron and neutron facilities).

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

Chair:

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