

SIG12

Reported Period: 2023-2024

Report Date: 30/07/2024

Reported by: Jerome Rouquette, Claire Colin, Gabriella Cavallo

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1. Introduction. (50 words max.)

The main activities of the SIG team have been to prepare Padova ECM. In Padova, the SIG12 representative to the program committee is Jérôme Rouquette. Gabriella Cavallo will be the SIG12 representative in Poznan for the ECM35.

2. SIG web site:

SIG12: <https://ecanews.org/groups/sig-12-crystallography-of-functional-materials/>

Future site should be: <https://ecanews.org/sig-12/>

3. Number of ECA individual members registered with the SIG

SIG12 Materials Science

83 (as of 30/07/2024)

4. Existence of a SIG mailing list: yes

SIG12 communicates with its members via the ECA webpages <https://ecanews.org/groups/sig-12-crystallography-of-functional-materials/>

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

83 members registered on <https://ecanews.org/groups/sig-12-crystallography-of-functional-materials/>

6. Plenary and Keynote speakers suggested by SIG12 for the ECM34 in Padova

Claudia Weidenthaler (Max Planck, Mülheim, DE)

Topic: In situ diffraction

Title: *In-situ diffraction: Elucidation of mechanochemical reactions of inorganic materials in a ball mill*

We also proposed

Pance Naumov (NYU Abu Dhabi, AE)

Topic: Material Science

Title: *Structural basis of mechanical properties and effects of molecular crystals*

7. List of MS organized by the SIG at the ECM34 in Padova

SIG12 proposed the following microsymbosia with support from other SIGs:

- Structural characterization in Functional materials
- Structural characterization of Energy Harvesting and Conversion Materials
- In situ and Operando diffraction with SIG6 and SIG8-(i.e. diffraction studies of working materials with simultaneous activity measurements. Not limited to powders). Time-resolved diffraction and scattering techniques

SIG12 supported the following microsymbosia proposed by other SIGs:

- High Pressure Crystallography: Exploring Structure and Method Development at Extreme Conditions
- New trends in quantum crystallography
- Aperiodic order and complex superstructures
- Electron diffraction joining forces with quantum crystallography towards materials science applications
- "Powder Diffraction at Synchrotron Source (Alternative titles: Advances in powder diffraction instrumentation at large facilities or Advances in powder diffraction instrumentation, or Progress in instrumentation)"

8. Prizes sponsored/coordinated

STOE regularly sponsors a poster prize in the field of the crystallography of functional materials at the ECMs.

9. Past Activities other than Microsymbosia at ECM

SIG12 supports the 18th European Powder Diffraction Conference (EPDIC18).

9. Future/Programmed Activities.

Currently, the SIG12 representative, Jérôme Rouquette, participates in the organization of the ECM34 in Padova as a member of the program committee.

SIG12 supports the 18th European Powder Diffraction Conference (EPDIC18).

Gabriella Cavallo will be the SIG12 representative in Poznan for the ECM35.

10. Other matters. (50 words max.)

Members of SIG 12 are also involved in the design and use of experimental stations and new sample environments at large scale facilities (synchrotron-neutrons) to open new possibilities for the structural investigation of functional materials under *in situ* and *in operando* conditions.

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

SIG officers are involved in the organization of conferences related to materials crystallography, materials science and diffraction-related meetings, AFC 2024 (French Association of Crystallography), Montpellier, France; crystallography at high pressure, European High Pressure Research Group 2026,

Montpellier, France. They participate in review and advisory committees in various European large-scale facilities.

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

Jérôme Rouquette (Chair)

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