GI-MS45- Women in crystallography

Chairs: Dr. Julia Contreras, Dr. Annalisa Guerri

GI-MS45-P01

Women under high pressure

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This is an initiative to highlight the (rising) number of women working in the high pressure research field. We come from all domains (geology, biology, physics, chemistry…). Indeed, we are not many, but we are many more than many people think. We are building up a public data base of women under high pressure group. We are several scientist women who work in the high pressure field. http://www.lct.jussieu.fr/pagesperso/contrera/index-hp.html

We have also created a FB and twitter accounts for everybody to be able to follow updates:

https://www.facebook.com/WHP-1731930103697127/?code=95036

The aim of our group is to provide the community with facilities to count with gender equality at any of the high pressure events and lists. It has also helped organizers of events and committees to have a fair gender representation and provide a great example of women in science and references to many women graduate students and postdocs in the audience.

We are trying to get as visible as possible not to be complainers and neither to build up a "women" club, our goal is to bring awareness and make us think twice in order to create a fair gender community.

References:

http://www.lct.jussieu.fr/pagesperso/contrera/index-hp.html

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GI-MS48 - Education in crystallography

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How symmetry in the islamic ornament can be relevant to introduce symmetry in the crystallography teaching.

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Crystallography uses the most elementary expression of symmetry, the visual one of geometry whose elements are the isometries of the Euclidian space: inversion, rotation, reflexion in a mirror, plus the translation in space, ideal crystal being supposed infinite. Mathematically, an object is symmetric if it remains invariant under the application of a set of isometries called symmetry group.

The drawings of Escher [*1*] are crystallographic classics in teaching two-dimensional space groups. Due to the biological nature of the interlocking objects in them, they are most appealing in the cases of the lower-symmetry groups. The other man-made two-dimensional periodical patterns suitable for the study of plane groups are primarily the Roman, Byzantine and Romanesque mosaics, and the gothic. Especially suitable, however, is the large group of Islamic geometric patterns, executed in tilework, brickwork, stucco, wood, marble and metal [2].

In Islamic ornaments, we encounter two types of symmetry groups:

1. Finite group: cyclic group C_n (Figure 1) and dihedral D_n ($6 <= n <= 96$) (figure 2) called groups of rosettes,

2. Infinite space groups: group of friezes in one-dimensional space (1D) and wallpaper group or crystallographic planar groups in two-dimensional space (2D).

The Islamic geometric patterns best suited for teaching come from linear drawing, the multi-coloured and interlaced patterns (Figure 2). Introduction of colour and interlaces introduce additional elements of complexity and subtlety in the decorative patterns. To rigorously describe the intertwined and coloured patterns, large number of groups are deduced from the parent plane groups [3]. Moreover, the order-disorder and quasiperiodic structures encountered in Islamic ornaments may facilitate the approach of structures in crystallography.

References:

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[3] E. Makovicky, Symmetry through the eyes of old masters, Walter de Gruyter GmbH, Berlin/Boston, 2016.

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