

**MS49-04** **Cinema and Crystallography.** Laura Torre-Fernández,<sup>a</sup> Santiago García-Granda,<sup>a</sup> *<sup>a</sup>Physical and Analytical Chemistry Department, University of Oviedo - CINN, Spain.*  
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Cinema and television contents can be used as a useful tool to introduce to students the scientific knowledge in a rigorous way. Nowadays the scientific series as “Bones”, “Numbers” or “Breaking Bad” are very popular and allow us to introduce important scientific concepts to students.

In a previous work [1] we introduce some examples of movies and series which can be used to explain important chemical concepts as saponification process, “Fight Club”, and chemical substances and their uses as nitrous oxide, “The fast and the furious” and “Lethal weapon”. In this communication, we choose some examples to introduce Crystallography to students in a enjoyable but also rigorous way. We used “Superman III” to explain the difference between crystalline and amorphous material, “Breaking Bad” and “Alice in the wonderland” to explain the quirkiness concept, “Superman” and “The man with x-ray eyes” to introduce the x-ray nature.

Some of these examples were used in two workshops organized by the University of Oviedo, “La Química en el Cine: Ficción o realidad” [2] and “La ciencia en el cine y la televisión” [3]. In these workshops the students saw some scenes or these movies and series and after that the teacher explained the concept in-depth way. The final results of these workshops were very satisfactory and the students showed a lot of interest.

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- [1] Torre-Fernández, L. & García-Granda, S. (2012). *An. Quím.* 108, 44-48.  
[2] [http://www.educastur.es/index.php?option=com\\_content&task=view&id=3150&Itemid=237](http://www.educastur.es/index.php?option=com_content&task=view&id=3150&Itemid=237)  
[3] <http://www.otri.uniovi.es/campuscientificosdeverano/quimica.htm>

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**MS49-05** **Boosting Crystallography teaching from Spain.** Fermín Otálora,<sup>a</sup> Juan-Manuel García Ruiz,<sup>a</sup> Santiago García-Granda,<sup>b</sup> *<sup>a</sup>Laboratorio de Estudios Cristalográficos (IACT, CSIC-UGr), Granada, Spain,*  
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During the last years, a series of initiatives have started in Spain to boost crystallography teaching. These initiatives are rooted in a set of educational objectives of a large national project (Consolider/Ingenio-2010 Program) called “Factoría Española de Cristalización”, teaming 11 research groups in different fields from small- to large-molecules crystallography and from structural crystallography to crystal growth. Within this context, we have developed:

- a crystallization contest targeting high school students and teachers with the aim to introduce them to basic concepts in crystallography and crystal growth and stimulating their interest in these disciplines and in science in general,
- a series of courses on specialized crystallization and crystallography topics allowing PhD students to acquire the knowledge and skills required for their postgraduate learning, and
- a full year official Master and PhD Program on Crystallography and Crystal Growth for postgraduate students wishing to get involved in research and development either in the public or private sector. The Universidad Internacional Menéndez Pelayo (UIMP) and the National Research Council (CSIC) are jointly steering this program with the collaboration of more than 30 national and international centers hosting courses and the practical work of our students.

The courses and the Master are taught in English and are international from their very concept. The crystallization contest is developed in the local language, but has been conceived to be easily exported and, in fact, editions of the contest have been held already in other countries.

Designing, starting and running these activities have been a challenging and enriching experience that has evolved into a larger teaming-up of the Spanish crystallographic community and a deep revision of the concepts, structure and objectives of teaching crystallography and crystal growth.

**Keywords: Teaching, Master, PhD, Crystallography, Crystallization**