

E-MRS: Rewarding collaborative materials research

Dr Luisa Torsi is the President of the European Materials Research Society – an interdisciplinary organisation which has been at the centre of materials science since its inception back in 1983. She recently met with us at *Research Features* to discuss her organisation's current areas of research, outlining why rewarding researchers of all ages is so important and why more needs to be done to support women in science.

The Colosseum of Rome, the Leaning Tower of Pisa, Stonehenge. Ensuring the longevity of magnificent historic structures like these, without compromising their historic and cultural integrity, is just one of the many areas that scientists from the European Materials Research Society are currently looking into – such is the expansive nature of their field. Dr Luisa Torsi, the President of the European Materials Research Society, recently spoke with us at *Research Features* about this and her organisation's other areas of research in more detail, including an exciting X-ray system.

How would you describe your role as President of the European Materials Research Society (E-MRS) and what kind of responsibilities do you have?

Technically the president of the E-MRS is the president of the Executive Committee (Ex. Comm), the body that is in charge of all aspects of the life and work of the society.

It is the Ex. Comm's duty to make sure that the society contributes to the advancement of the science and technology of new materials, through consultation, cooperation and the exchange of information between scientists and engineers. The Ex. Comm also identifies priority areas for European research and provides advice for European research programmes.

This is an interesting role in a highly dynamic society. The E-MRS differs from many

single-discipline professional societies, as it encourages scientists, engineers and research managers to exchange information on an interdisciplinary platform. The society also recognises professional and technical excellence by presenting awards for achievement, from student to senior scientist level. As part of the International Union of Materials Research Societies (IUMRS), the E-MRS enjoys and benefits from very close relationships with other materials research organisations elsewhere in Europe and around the world.

E-MRS is currently running multiple projects in different areas. What are the key research focuses for the organisation over the next two years?

E-MRS has been involved in a number of European projects on several themes, ranging from using CO₂ as a raw material for energy storage, to materials for cultural heritage. One particular venture I'd like to mention is the i-FLEXIS project. i-FLEXIS is a newly developed X-ray sensor system, which uses crystals to sense the presence of X-rays. Innovative in design, this reliable and low-cost device has many potential areas of application, including radiography, radiology and airport security. Current X-ray detecting tools tend to be bulky, rigid, costly and non-energy efficient, whereas i-FLEXIS is both flexible and robust, and offers an affordable, environmentally-friendly alternative. Quite different, but equally strategically relevant, is the HERACLES project. The aim of this project is to develop innovative solutions to reinforce the resilience of cultural heritage sites,



E-MRS spring meeting 2016, in Lille, France

structures and artefacts against the effects of climate change and natural hazards. Part of the HERACLES remit is to design solutions which take into account the meaningfulness of these cultural sites for people, and to respect their historic and cultural integrity.

How big an influence has E-MRS had on materials science since it was first established in 1983? Are there any achievements that really stand out for you?

I would say the E-MRS has definitely set the standard for fostering and disseminating materials research in Europe. It was established in 1983, thanks to Professor Paul Siffert and other scientists.

The E-MRS differs from many single-discipline professional societies, as it encourages scientists, engineers and research managers to exchange information on an interdisciplinary platform

At that time, before the European Union started to support research and development, materials scientists were already advocating a pan-European approach. The E-MRS's main achievement over the years has been supporting the development of scientists and engineers, not only from academia, but also from the private sector. This has been vital for the development of materials science as an interdisciplinary topic within Europe.

Every year E-MRS organises a spring conference. Could you tell us a bit more about this? How important is it for the materials research community?

The E-MRS spring meeting is held every

year in May or June and features a diverse selection of topical symposia. Our aim is to cover a wide range of topics, whilst also providing an opportunity for the deepening of discussions in key fields to occur. This is the reason why the number of parallel symposia has never grown too large. Nonetheless, the number of attendees has been always reasonably high.

Internationally significant, the conference is the largest of its kind in Europe, with about 2,500 attendees every year. Those who present symposia at the meeting often publish their own findings, documenting the latest experimental and theoretical developments

in material science. One significant aspect of the 2017 meeting is that this year we will be returning to Strasbourg which, as well as being the seat of the European Parliament, we consider to be the E-MRS's home.

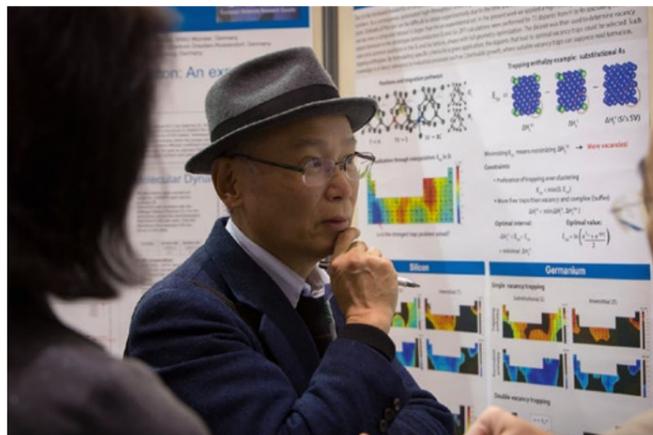
E-MRS also organises a fall conference – how is this different to the spring conference?

The fall meeting, held in the elegant Technical University of Warsaw, is steadily expanding, with attendance figures now reaching nearly 1,500. It has an excellent programme which features the latest developments in the topics selected by the conference chairs. The main differences reside in the recognition awards that are presented in the two main conferences. The Warsaw meeting is characterised by the awarding of the prestigious Jan Czochralski award, named after one of the renowned Polish scientists. Previous recipients of the award include Professor Federico Capasso and Professor Mildred Dresselhaus. Besides the two conferences, each year E-MRS organises, co-organises, sponsors or co-sponsors numerous scientific events and meetings.

Collaboration and communication are obviously key elements to the success of E-MRS. How did the European Materials Forum (EMF) come about? What are its main aims? And what else does E-MRS do to foster scientific collaboration?

The European Materials Forum, EMF, was initially launched in 2004, when a number of scientific societies and organisations (including the E-MRS) decided to combine their efforts and shared interest in the debate about materials science in Europe. They were also interested in stimulating the involvement of the scientific community in Europe, not only through an active participation in the debate, but also by generating strong contacts between research and industry. The long-term agenda of the EMF is the promotion of scientific and technological development in Europe in the field of materials science and technology. Particularly relevant is the recognition of the importance of the objectives defined by the Lisbon and Barcelona EU Summits. The activities of the EMF include an open exchange of ideas and information, plus the preparation of statements on European materials science policy issues. EMF has already organised several meetings and more than 80 materials societies have supported these conferences.

From a more personal perspective, your research has spanned multiple disciplines. How important has cross-speciality



collaboration been to your work?

Multi-disciplinarity is a constant in my career. My masters degree is in physics, while my PhD is in chemistry, and I've always worked at the interface between the two. It is challenging, but very interesting, and I see materials science as the natural discipline in which to develop my research activities.

In 2010 you became the first woman to receive the Heinrich Emanuel Merck Prize for Analytical Sciences. This was the first time it was awarded to a woman and to an Italian scientist. How does it feel to win such an award? Do you think enough is being done to encourage more women into the area of materials science?

The winning of the Merck prize was a real milestone in my career. It felt amazing to receive such recognition for my work. I was given the award for my work on organic semi-

conducting chemical sensors based on organic field-effect transistors. Such components make it possible to perform highly sensitive analytical measurements of chiral substances. Besides being a very difficult bench-test for sensors, chiral substances are important as they are responsible for many biological effects in enzymes, antibodies or other molecular systems.

As you mention, the prize marked the first time the award was given to a woman and to a scientist in Italy. For more than 20 years, the Heinrich Emanuel Merck Award has been recognising scientists under the age of 45 whose work focuses on new methods in chemical analysis and the deployment of applications aimed at improving the quality of human life, in fields such as environmental protection, life sciences or the biosciences.

My masters degree is in physics, while my PhD is in chemistry and I've always worked at the interface between the two



The problem of the very low presence of women in science, particularly when it comes to apical positions, is a huge one and it is far from being solved. The statistics are very clear on this. I believe that not enough is being done to solve this problem and, sadly, it is the same all over Europe and in the USA. I think the promotion of positive role models is a really important way of encouraging younger female students to consider not only jobs in science and technology, but also those of an apical position.

How do you see the landscape of materials science research changing over the next ten years? What strategies will the E-MRS be putting in place to facilitate future developments?

E-MRS will keep fostering the advancement of materials science as a key field for the development of technologies, with applications ranging from healthcare to energy. We will do this through the organisation of large meetings, as well as by providing a space for the development of activities and forums between academia, industry and policy makers to take place.



Dr Luisa Torsi speaking at the E-MRS spring conference

Another key activity of the E-MRS is dissemination and recently, thanks to the efforts of Professor Rodrigo Martins, a top-tier interdisciplinary platform for scientists to share and promote 2D materials research and applications has been established. E-MRS has also co-founded a new online-only, open access journal: *npj 2D Materials and Applications*. The publication is part of the *Nature Partner Journals* series, published in partnership with the Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa (FCT Nova) with the support of the E-MRS.

• To find out more information about the European Material Research Society's events and meetings, please visit their website at www.european-mrs.com.



Contact

European Materials Research Society
23 Rue du Loess
BP 20 - 67037
Strasbourg Cedex 02
France

E: emrs@european-mrs.com
W: www.european-mrs.com

