IET Travel Award 2022 - Report

Dr Rhiannon Heard
The Natural History Museum, London
Trinity College, University of Oxford, Oxford

After two years of virtual conferences, collaborations and zoom meetings, on the 21st of April 2022 I could be found with bag packed, presentation finalised, and conference proceedings in hand, checking in at Gatwick Airport. It was thanks to the Institute of Engineering (IET) Travel Bursary that my destination would be the 9th International Congress on Microscopy & Spectroscopy 2022 (INTERM 2022) in Turkey. The conference was an in-person only event, one of the first post-Covid-19 in the field of microscopy. It focussed on facilitating collaboration and dynamic knowledge sharing of innovations and techniques in microscopy and spectroscopy. Having recently completed my DPhil (PhD) at the University of Oxford, which focussed on developing novel in situ scanning electron microscopy (SEM) techniques and technology for high temperature imaging of metal alloys, INTERM2022 would be my first conference as an invited speaker.

For the conference, I presented my latest research as a postdoctoral researcher at the Natural History Museum, London, entitled "EDS/SEM that is out of this world! Enhancing low voltage quantification for extra-terrestrial samples". The project involved characterisation of new microanalysis reference materials with the aim of developing novel techniques for quantitative non-destructive characterisation of meteorites. The work presented focussed on the development of quantitative analysis techniques, using energy dispersive spectroscopy (EDS), for sub-micron sized platinum group element metal nuggets, which are commonly found within meteorite samples. The oral presentation was well received by the international community and prompted several questions regarding the future applications of the technique and the impact on the science of meteorites. Most notably one attendee posed the question of what these findings could tell us about the beginning of the universe (a.k.a The Big Bang), a question under investigation in the Planetary Science department, Natural History Museum.

Beyond showcasing our research, I also gained insight into new technology developments in microscopy across the world. A presentation by Daria Derusova, for example, demonstrated the use of vibrometry imaging, a novel technique, to locate areas of cracking or damage on aircraft, helping to identify areas requiring improvement or repair across the aircraft's fuselage and wings. Another, by Filipe Mergulhao, described the use of microscopy techniques to optimise biofilms for protein production. These talks demonstrated novel adaptations and applications of current microscopy technology; an area of particular interest given my experience in technology development.

In addition to the stimulating scientific seminars, the organising committee also offered an array of social programs, which provided the opportunity to build stronger connections and networks with attendees in a more informal setting, whilst also visiting the wonders of Turkey. One trip involved a visit to St-Nicholas Island, famed for its 5th century BC monastery, during a cruise across the Blue Lagoon. Aside from being a naturally occurring place of beauty, Turkey's Blue Lagoon is also famous for paragliding. Being up for a challenge, I took the 6500ft leap (or drop depending on your perspective) off the top of Babadag Oludeniz Mountain to paraglide across the Blue Lagoon - a truly breath-taking experience.

Overall, INTERM2022 left a very positive and long-lasting impression, providing exciting speakers, a fantastic network of attendees and a beautiful setting in which to work. My thanks to the generosity of the Institute of Engineering Technology (IET) for awarding me this travel bursary, without which I would not have been able to raise the international profile among the microscopy and engineering community of the research conducted at the Natural History Museum.

Dr Rhiannon Heard presenting at INTERM2022.

Paragliding across Turkey's Blue Lagoon.
Dr Rhiannon Heard + paragliding instructor pictured.