

# Travel Award Report

TOBY WILLIAM ROBSON

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**HERCULES**  
**European School**

Organized by Université Grenoble Alpes  
& Grenoble Institute of Technology



I applied for a travel award from Royal Holloway to fund a five-week long trip to Grenoble, France. Whilst in France I attended the HERCULES course. My research focuses on the use of reflectometry techniques either utilizing neutrons or x-rays to obtain structural information on solid-liquid interfaces buried within an oxidizing aqueous medium. The HERCULES course is intended to train young or inexperienced researchers in the use of neutron and x-ray techniques at large facilities. Using x-rays or neutrons requires a source, in the form of a large scale facility, see the Diamond Light Source (x-ray synchrotron) or ISIS (neutron spallation source) in Harwell, Oxfordshire, where I am based day to day. HERCULES was hosted and funded in part by the ESRF (European Synchrotron Radiation Facility) and the ILL (Institut Laue-Langevin, a neutron reactor source) French counterparts to ISIS and DLS. HERCULES is the only comprehensive course on neutrons and x-ray in the world. HERCULES covers techniques from protein crystallography to neutron scattering within magnetic metallic systems, with lectures on reflectometry and soft matter systems. HERCULES was therefore essential to my research considering my background as a chemist, not particle physicist and required understanding of the reflectometry techniques I am using.

HERCULES also offered the opportunity to visit other facilities as well as the ESRF and ILL to further increase our knowledge and repute within the community. I was given the opportunity to visit the Elletra synchrotron near Trieste in Italy for one week. The researchers there were very welcoming and afforded us the opportunity to attend practical sessions at their beamlines. These sessions were very informative and afforded us plenty of opportunity to discuss with the beamline scientists in detail about the experiments we were performing. Aside from this a separate opportunity to have one to one discussions with beamline scientists was afforded to us. We were advised to choose the scientists based on preference towards the techniques that could be potentially applied.

As well as immediate benefit the course itself was an essential introduction to the research field. I hope to take a career forward using large scale facilities, a high degree of knowledge is of course required of the techniques I intend to use day to day, as well as this HERCULES provided introductions into many different techniques. This knowledge will be very useful whilst pursuing a career at large scale facilities and involving myself as an active member of the community. Knowledge of other techniques will of course be useful in branching out into other areas of

research or applying various possible neutron and x-ray techniques to the work I am and will be undertaking.

Alongside learning a great deal on the HERCULES course I also met many other young researchers and senior lectures and research scientists and the ILL and ESRF. This great opportunity to network with the wider community has established contact between myself and other students pursuing similar research, I have, in fact met other students since who have come to DLS or ISIS for experiments.

In conclusion the HERCULES course was an invaluable experience for me in many ways. Aside from the apparent benefit of targeted, well taught lectures the opportunity to meet other students and network with more senior researchers was invaluable. Due to the length, prodigious nature and location of the course the financial cost was significant. I would not have been able to attend the course if not for the Royal Holloway Travel Award and am therefore very thankful, and would advise any future students hoping to attend any similar courses or travels abroad to apply. The award is a great opportunity to allow students to pursue opportunities that may otherwise be difficult to attend.

***Toby Robson***

