Dalton Cumbrian Facility
Paid Undergraduate Summer Research Placement (REF: DCF2018-3)

Material science (materials characterisation)

Project start date: June 2018   **Duration:** 6-10 weeks (split: experimental work/data analysis)

Project summary: Scanning electron microscopy has played a vital role in material science in the last 40 years as imaging and X-ray detectors have developed exponentially, and it is still the most important way of collecting experimental data.

There has been a long debate about the accuracy of low versus high energy X-ray detectors, and the newest models are developed to work on extremely low energy.

The aim of this project is to determine if we can optimise our X-Max detector to work on low energy with increased accuracy compared to high energy mode. Data will be collected on at least 15 different high purity standard alloys and at least 5 randomly selected samples.

The composition will be calculated on both high and low energy and will be confirmed by WDS (wavelength dispersive spectrometry) and in the case of stainless steel the grains will also be mapped with EBSD (electron backscatter diffraction).

Towards the end of the project the candidate will be encouraged to choose an "every day item" to be characterised independently utilising all knowledge and skills learnt during the placement.

The project will be completed on an FEI Quanta 250 Environmental Scanning Electron Microscope at the Dalton Cumbrian Facility, and might also involve mechanical preparation (e.g. grinding and polishing) prior to characterisation.

Location: The University of Manchester's Dalton Cumbrian Facility (DCF) on Westlakes Science & Technology Park near Whitehaven. The successful candidate must have their own accommodation in West Cumbria for the duration; The University of Manchester cannot provide or subsidise living costs for this placement.

Requirements

- An interest in electron microscopy and X-ray spectrometry
- Experience in electron microscopy, sample preparation or Microsoft Excel would be advantageous but is not essential
- Good mathematical skills and the ability to complete calculations independently
- Good analytical thinking
- Good time management skills and the ability to work under own initiative
- Good communication skills and the ability to work as part of a team
- Ideal for an undergraduate student

Salary: The successful candidate will be paid £8.64 per hour based on a 35 hour working week.

How to apply: Please email a CV and covering letter to Anne.Knott@manchester.ac.uk by 5pm on Monday 21st May 2018. Your CV should include email addresses and telephone numbers for two referees who are happy to be contacted in relation to this post. Your covering letter should include the post reference number and should explain:

1. Your reasons for wishing to undertake this particular project
2. How you meet all or most of the requirements set out above

Shortlisted candidates will be invited to interview in mid-May. Dates can be flexible to accommodate exams and other commitments. Interviews may be in person or via an appropriate digital platform, e.g. Skype or Facetime.