Postgraduate Scholarship in Experimental Condensed Matter

PhD project: "Synthesis and characterisation of new oxychalcogenide materials"

Supervisors: Dr. E. E. McCabe and Dr. S. Ramos, School of Physical Sciences, University of Kent

An EPSRC funded PhD position is available to work on the synthesis, physical properties and crystal and electronic structures of oxychalcogenide materials. Mixed anion materials (such as oxypnictides and oxychalcogenides) are relatively underexplored yet often exhibit exotic physical properties (e.g. unconventional superconductivity, p-type semiconducting behaviour in transparent systems). A better understanding of the electronic structure of transition metal oxychalcogenides, how it can be tuned and its link to the development of electronic order (magnetism and superconductivity) is essential to realise the full potential of mixed anion systems. This project will involve the synthesis of new mixed-anion materials followed by experimental work to characterise these new systems. Structural characterisation will be carried out using both X-ray and neutron diffraction (both in-house and at central facilities such as Diamond, ILL, ISIS) and analysis will involve Rietveld refinement. Spectroscopy (including EXAFS, XANES) will also be used to understand the structure at a local level. Measurements of magnetic behaviour, conductivity and optical properties will also be essential to understand the structure-composition-property relationships in these complex systems. This experimental work may be complemented by electronic structure calculations as appropriate.

The student will be expected to work well as part of the research group (e.g. contributing to group meetings, sharing expertise with group members) both within the Functional Materials Group at University of Kent, but also at central facilities both in UK and abroad, as required.

Entry requirements and funding: Applicants should have or expect to obtain a first or upper second class honours degree (or equivalent) in Physics, Chemistry or a related subject. This is an EPSRC funded Scholarship, which will be offered at the standard UK Research Councils' rate (currently £13,863; to cover living costs) and will additionally cover tuition fees at the Home/EU rate (currently £3, 996 per annum).

Webpages: http://www.kent.ac.uk/physical-sciences/research/fmg/index.html

Contact: For further information or informal enquiries, please contact Dr. Emma E. McCabe (E.E.McCabe@kent.ac.uk) or Dr. Silvia Ramos (s.ramos-perez@kent.ac.uk)

How to Apply: To apply please go to: http://www.kent.ac.uk/courses/postgrad/apply/index.html

You will need to apply through the online application form on the main University website. Please note that you will be expected to provide personal details, education and employment history and supporting documentation (Curriculum Vitae, transcript of results, two academic references).

Deadline Date for Applications: Friday 26th of May 2014.

Interviews to be held: June 2014