Imperial College London

Department of Materials and Department of Chemistry

Multifunctional structural composites for electrical energy storage

Duration: 36 months

Supervisor: Professor Milo Shaffer

We are inviting motivated candidates for a PhD studentship in the exciting field of Multifunctional structural composites for electrical energy storage.

Imperial College London is pioneering the emerging field of structural power: high performance structural composites that also have the intrinsic capability to store/deliver electrical energy. (Further information here).

Such systems present stimulating technical challenges, but are anticipated to have a profound effect the future of electrically-powered transportation and portable electronics. Following the award of significant funding to investigate both the fundamental science of structural power materials and the engineering applications of this technology, we are expanding our multidisciplinary team of electrochemists, material scientists and composite engineers. The goal of this PhD will be to devise, synthesize and characterize new structural supercapacitor architectures, with intrinsically shorter ionic diffusion distances than our existing laminated configurations. Fibre and tow level devices, involving novel nanocoatings and multifunctional matrices, will be optimized and then assembled into larger composite components. Whilst there will be considerable freedom to develop new concepts, the wider project offers opportunities to work with closely with industry to explore adoption of structural power in transportation applications, particularly aerospace. The project will suit a student with a broad interests in nanomaterials, electrochemical energy storage, and structural composites.

You will join a dynamic research team focusing on hierarchical assemblies and composites, at Imperial College London (www.imperial.ac.uk/nanostructures-and-composites); the group has a strong activity in the chemistry, processing, and applications of nanocarbons, including graphene and nanotubes. Applicants should have solid knowledge in physical science, with an interest in nanomaterials, combined with good teamwork and communication skills; experience of electrochemical systems or composites would be an advantage but is not essential. Candidates should have (or be expecting to have) a Master’s degree (1st class or upper second class) in materials, physics, chemistry, or relevant discipline.

For further information, contact Professor Milo Shaffer.

The studentship includes fees and a stipend of £16,553 for suitable candidates who are eligible as UK home students for the duration of 3 years.

How to apply:
The prospectus, entry requirements and application form (under ‘how to apply’) are available at: http://www.imperial.ac.uk/pgprospectus

For further details of the post, please contact Professor Milo Shaffer at m.shaffer@imperial.ac.uk. Applicants will be required to complete an electronic application form. It is expected that the studentship will begin by 1 October 2017.

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Imperial Managers lead by example.

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people