PhD Studentships - Processing and characterisation of 3D interpenetrating polycrystalline super-hard materials

Department of Materials, Faculty of Engineering

Campus: South Kensington Campus

Duration: 48 months (starting on 1st October 2018)

Polycrystalline diamond (PCD) and polycrystalline cubic boron nitride (PcBN) are widely used in applications of earth boring, road planning, mining and machining as super-hard materials. These materials are typically sintered under high pressure-high temperature (HPHT) conditions over 5.5 GPa and 1400 ºC. Both PCD and PcBN can be made from diamond or cBN with various grain sizes, depending on the applications. The aim of this project is to develop novel products with 3D interpenetrating “composite” structures of PCD or PcBN with different grain sizes. Unlike traditional composites having one continuous phase and one discrete phase, interpenetrating composites are a new type of composite structures where both phases are continuous and 3D interpenetrating into each other. They mimic many natural materials such as bone and bamboo, enabling superior multifunctional characteristics and properties.

This project is in collaboration with Element Six.

This programme seeks candidates for October 2018 entry.

For more information please see our website: http://www.imperial.ac.uk/structural-ceramics/. To make informal enquires please contact Professor Eduardo Saiz (e.saiz@imperial.ac.uk).

Applications will be handled in two stages:

Stage 1: Send a full CV, including your marks (%), the names and contact details of two referees, as well as a covering letter, to Professor Eduardo Saiz (e.saiz@imperial.ac.uk).

Stage 2: Suitable applicants will be interviewed and, if successful, invited to make a formal application. The prospectus, entry requirements and application form (under ‘how to apply’) are available at: http://www.imperial.ac.uk/pgprospectus. Please contact Fiona Thomson (fiona.thomson@imperial.ac.uk) for further information. Information about the Department can be found at http://www3.imperial.ac.uk/materials

Closing date: 1st September 2018

Funding: is available to applicants who have been ordinarily resident in the UK for three years prior to the start date

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

The College is a proud signatory to the San-Francisco Declaration on Research Assessment (DORA), which means that in hiring and promotion decisions, we evaluate applicants on the quality of their work, not the journal impact factor where it is published. For more information, see https://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-evaluation/