



The  
University  
Of  
Sheffield.

Faculty  
Of  
Engineering.

## **Sheffield – Rolls-Royce Engineering Scholarship**

### **PhD full-fees scholarship for China Scholarships Council scholars from Zhejiang University**

**Project:** *Next generation of Integrated Power Electronics*

Nearly 40 % of the energy is consumed in the form of electricity with annual consumption worldwide increasing at a rate of 2.6%. Power electronics is critical to achieve efficiency in the consumption of electrical energy, and pave way towards a sustainable energy society. This project is particularly aimed at the integration of different semiconductors (Silicon, Silicon Carbide, Gallium Nitride and Diamond) to realise the next generation of Integrated Power Electronics. Each of these materials has its advantages and disadvantages. Therefore, rather than trying to get the best of a single material, integration of these materials in a common substrate to achieve integration of power electronics looks to be an ideal approach. If such were to be realised, we can achieve highly thermally efficient, high temperature compliant, light weight power electronics with significantly added functionalities. While specific applications are not targeted at this level, the intention is to focus on aerospace applications through Rolls Royce support and interaction. It is expected that the project will derive benefits of advancements of different technologies already made to date, such as ultra thin Si MOS-Bipolar power devices and control electronics, SiC diodes/JFETs and advanced GaN devices to achieve the integrated function over a polycrystalline diamond substrate.

**Supervisor:** Prof SN Ekanath Madathil (Electronic and Electrical Engineering)

**Scholarship:** This scholarship, which is supported by The University of Sheffield and Rolls-Royce, covers the full cost of PhD registration fees for 3 years.

**Eligibility:** Sheffield Engineering scholarships are available to students who secure a CSC scholarship. Applicants must meet the University of Sheffield English Language requirements, full details of which are available at:

[http://www.shef.ac.uk/postgraduate/info/notlive\\_dfiohmihtm.html](http://www.shef.ac.uk/postgraduate/info/notlive_dfiohmihtm.html)

**Applications:** Please send a CV together with a brief covering letter to Professor Geraint Jewell, Faculty of Engineering Director of Research and Innovation at [g.jewell@sheffield.ac.uk](mailto:g.jewell@sheffield.ac.uk) by **15<sup>th</sup> March 2009**. Include the title of the project in your covering letter and any English language test results.