



The  
University  
Of  
Sheffield.

Faculty  
Of  
Engineering.

## **Sheffield Engineering Scholarships**

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

**Project:** *Optimisation of Algal Biodiesel Production using a Systems Biology approach*

If biodiesel derived from algae is to replace oil derived fuel for transportation and heating it will require a massive scale up and optimization of current technology. Biodiesel derived from algae cultivated in ponds takes up far less useful agricultural land area than that derived from crops. This project will work at the interface between systems biology and biochemical engineering in order to quantify the key determinants of algal growth and lipid production so as to optimize algal biodiesel production. Lipids are the key constituent of algal cells that can be separated and converted into biodiesel. We will cultivate *Dunaliella salina* (a unicellular green alga which can grow in extremely high salinities) in a continuously operated lab-scale photobioreactor (2-5 litres). This work will enable us to find the key process variables (e.g. temperature, pH, salinity, substrate and dissolved gas concentrations) that effect growth and lipid content. We will also investigate changes in gene and protein expression that occur during lipid production in order to identify which metabolic pathways are involved and how they could be manipulated to give higher lipid yields. The Department of Chemical and Process Engineering and the ChELSi research institute can provide experimental facilities and high throughput equipment for systems biology.

**Supervisor:** Dr Stephen Wilkinson (Chemical and Process Engineering)

**Scholarship:** Sheffield Engineering scholarships cover 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\\_dfiohmihsm.html](http://www.shef.ac.uk/postgraduate/info/notlive_dfiohmihsm.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.