



Advanced Modelling of Heat-Mass Transfer in Foods and Beverages for Sustainable Manufacture, Storage and Distribution

The University of Surrey, in collaboration with Unilever, is pleased to announce an exciting opportunity to join the Practitioner Doctorate in Sustainability programme. Hosted by the internationally acclaimed Centre for Environmental Strategy, the Practitioner Doctorate in Sustainability programme is the first of its kind, offering talented and ambitious researchers a unique experience in collaborative research spanning industry and academia. As a researcher on this programme (“Doctoral Practitioner” or “DP”), you will be primarily based with your industrial sponsor (“Partnering Organisation” or “PO”), Unilever, for the majority of your time on the programme, which will give you valuable industry experience that you could not otherwise gain from a “traditional” PhD. You will benefit from a personalised programme of skills training and academic modules; input from academic and industrial supervisors; a generous living stipend; flexible options for the type of qualification you complete (ie. PhD or EngD). No other doctoral programme will offer you this level of flexibility and control over your studies. By completing a doctoral programme that is tailored to meet your specific needs, you will become best-equipped to fulfil your future ambitions as a sustainability leader, be it in academia or in industry.

Unilever is a world leading company of foods, refreshment and home–personal care products. The company is committed to double the size of its business and half its environmental impact by 2020. Unilever’s R&D Centre at Colworth, Bedford sponsors 9 BBSRC CASE awards and 4 EPSRC awards each year. In partnership with the Centre for Environmental Strategy, the company is focussing on the issue of food waste. It is estimated that about 1/3 of the world’s food production is wasted. In developed countries, much of the wastage occurs in product manufacture, storage, distribution and consumption. This project aims to develop advanced heat and mass transfer models to achieve reduced wastage and energy use in food manufacture, storage and distribution. The research will focus on two high energy consuming product areas: ice cream, and tea-based beverages. The project will directly address sustainability issues in food engineering systems by the development of advanced heat-mass transfer models, through a multi-physics and multi-scale life cycle thinking approach interacting with product microstructure and property change. Predictive tools will be developed to select the most resource-efficient value chains from formulation through manufacturing and storage to distribution. New methods will be investigated and developed (multi-scale life cycle thinking methods, multi-physics methods, combined with meta-modelling) at the leading edge of new scientific methods of supercomputing. The developed technologies are fundamentally generic and can subsequently be further adapted to other areas within the food and drink industry.

Applications are invited from self-motivated, confident and enthusiastic candidates with exceptional critical and innovative thinking. With proven interpersonal skills, you will be able to work across a range of academic and professional disciplines within a complex organisational structure. The successful candidate will hold a first degree in Chemical Engineering (at least a 2:1) or another relevant discipline (eg. other engineering disciplines) and will demonstrate substantial mathematical and quantitative modelling skills. Prior experience in computer programming and/or mathematical modelling of heat and mass would be an advantage. A Master’s degree is not a pre-requisite but would be looked upon favourably, as would any relevant industry experience. Candidates must demonstrate (at least) a basic knowledge of sustainability (in-depth training will be given) with clear enthusiasm to work in ‘sustainability’. Having considered the Project Brief (available upon request), *candidates should outline the relevance of their own experience(s) in their covering letter.*

To apply for this project, please contact k.boazman@surrey.ac.uk for an information pack, which will include:

- A Project Brief

- Details of the Practitioner Doctorate in Sustainability programme
- An application form

This project is due to begin on the **13th of April 2015** and the successful candidate will be based in Guildford until the 3rd of July 2015, after which he/she will be based at Unilever's R&D Centre in Colworth, Bedford. The programme will run for four years. The successful candidate will receive a generous stipend of £18,000 per annum throughout this time. Stipends are usually tax-free and DPs will also benefit from an additional £500 p.a. allowance for attendance at conferences etc. In addition to this, full-time tuition fees will be covered at the current Home/EU rate for the duration of the programme.

Interviews for this post are expected to take place in Bedford on the 20th or 23rd March 2015 (still tbc) and the deadline for applications is 23:59 on the 12th March 2015.