

PhD Studentship: Biopolymer depolymerisation studies using supercritical fluids

Description: Oil-derived plastic waste is an environmental problem around the world. Biopolymers are seen as substitutes of traditional polymers since they come from renewable sources. However, most commercial biopolymers can still be a source of pollution since their natural degradation is sometimes comparable to that of oil-derived plastics. Chemical recycling, part of a circular economy approach, is a sustainable alternative to treat end-of-life bioplastic to recover valuable materials, including the monomer.

This PhD project will explore the use of supercritical fluids and co-solvents for the recovery of valuable chemicals from a series of targeted bioplastics. The project will bring together concepts from Chemistry and Chemical Engineering to understand and optimise the conditions (experimentally and through modelling) that maximise the conversion of the biopolymers into valuable materials.

As part of the project, you will learn and develop the analytical techniques to characterise the products of the supercritical separation process and will acquire skills in experimental and modelling of reactor design including optimisation. There will be opportunities during the project to present the results at international conferences.

This PhD is a School of Engineering Bursary covering fees and a £15k stipend per annum for three years.

Supervisory Team: The successful applicant will be working with Dr Luis Roman. As a PhD student, you will join the London Centre for Energy Engineering (<https://www.lsbu.ac.uk/research/centres-groups/london-centre-for-energy-engineering>) and work alongside a range of new and experienced PhD students in a collaborative environment.

For informal enquiries please contact Dr Luis Roman (romanral@lsbu.ac.uk). Please send a copy of your CV with a covering letter directly to Dr Roman before applying.

Requirements: Applicants must be of outstanding academic merit and should have (or be expected to gain) either a first class or an upper second-class Honours degree (or the international equivalent), or an MSc/MRes with distinction. Enthusiastic and self-motivated candidates from all countries with a background in Chemical Engineering, Chemistry, Physics or a related discipline are encouraged to apply. A good knowledge or experience in characterisation and analytical techniques would be advantageous.