

Dr Bushra Al-Duri

Reader in Chemical Engineering

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Research

RESEARCH INTERESTS

The main theme of my research is Green Chemistry in [Supercritical Fluids](http://www.eng.bham.ac.uk/chemical/research/Supercritical.shtml) (<http://www.eng.bham.ac.uk/chemical/research/Supercritical.shtml>). This includes:

- Hydrothermal Processing Research in Supercritical Water for Environmental and Waste Minimisation studies. The aim is to use the knowledge of supercritical water chemistry and engineering background to conduct investigations that address commercial scale problems and existing challenges
- Improvement of reaction kinetics using supercritical fluid reaction media to eliminate undesired side reactions (such as coking)
- Isolation and purification of high value minority lipids from plants and edible oil refinery streams using supercritical CO₂
- Immobilised Enzyme biocatalyses for oleochemical reactions (modification of oils and triglycerides)
- Adsorption studies for various solid/liquid contact applications namely wastewater treatment, CO₂ sequestration, and immobilisation studies

CURRENT AND PAST RESEARCH PROJECTS

Current Projects

- Heterogeneous Catalysis in Supercritical Fluids: Enhancement of catalyst stability by supercritical route: J Wood & B Al-Duri (University of Birmingham); and S Rigby (University of Bath)
- Catalytic wet air oxidation (CWAO) for removal of N-containing hydrocarbons from wastewaters: B Al-Duri , R C D Santos
- Fractionation of tocopherols & tocotrienols from palm fatty acid distillates by SCF: R C D Santos & B Al-Duri
- Preparation & utilisation of hydrocalcite for CO₂ adsorption & methane dry reforming: J Wood & B Al-Duri
- Heterogeneous Catalysis in Supercritical Fluids: J Wood & B Al-Duri
- Investigations on supercritical water oxidation for wastewater treatment: Improved engineering designs: B. Al-Duri

Recently Completed Projects (over the last 5 years)

- Production of Liposomes using SCF technology
- Supercritical water oxidation of waste aqueous pharmaceutical effluents
- Extraction of value-added lipids from Amaranth seeds
- Production & coating of drug polymer carriers by SCF technology (PGSS)
- Supercritical water oxidation & wet air oxidation of DBU
- Regeneration of spent activated carbons by scCO₂
- Removal of Wax as Flavour Barriers from plants by SCF technology
- Studying of polymers behaviour as drug excipients in SCCO₂, GlaxoSmithKline