SCIENCESPRINGDAY

FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

Department of Chemistry

Development of green processes

REQUIMTE

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PhD in Chemical Engineering

39 Publications; 2 Patents

Expertise in the development of environmental benign solvent processes, in particular supercritical fluids.

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Objectives

Application of green solvents (supercritical fluids and ionic liquids) to separation processes

- High Pressure Phase Equilibria of Multicomponent Systems;
- Computational Fluid Mechanics and Process Dynamics;
- Valorization of Residues and Sub-Products from the Agro-Food Industry;
- Development of integrated green processes.

Solid extraction plant

Methodology

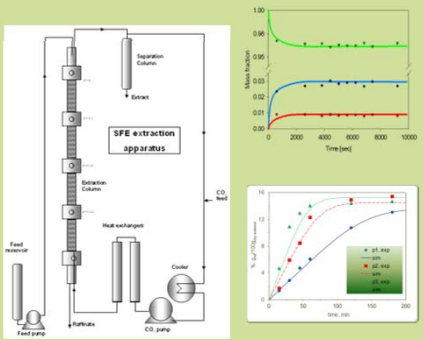
Development of integrated and sustainable process for the valorization of wastes from agro-food industries, by producing added-value chemicals, materials and biofuels, via a "green" production process combining critical fluids (subcritical water and supercritical carbon dioxide) and biocatalysis (enzymes and microbial organisms).

Extraction of oil and added-value substances from biomass; Enzymatic transesterification of oil into biodiesel, and process integration in ScCO2; Sequential subcritical water hydrolysis.

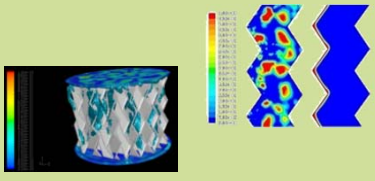
Counter current packed column

Expected Results

- Dynamic models of SF extraction processes;
- Computational fluid dynamic models of extraction equipment for supercritical processes;
- Integrated and sustainable processes for valorization of agro-food wastes (Portuguese patent)
- Use of static mixers as new extractors and heat exchangers for SF processes;
- Economic evaluation of SF processes.



Plant layout



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SI Inovação/Inovação Produtiva nº 22430/2011; I&DT Empresas/Projectos Individuais nº 5493/2009 (Novadelta - Comércio e indústria de cafés, S.A.)