COST ACTION GREENERING – DATA COLLECTION

First name, Family Name: Helena Sovová
Type (Academic or Industrial): Academic
Country: Czech Republic
Leadership position in the COST: MC substitute
Working Group in which you are involved: WG3
E-mail: sovova@icpf.cas.cz

Laboratory/Company:
Supercritical Technologies Group / Institute of Chemical Process Fundamentals of the CAS, v. v. i.

Laboratory/Company info:
Supercritical Technologies Group has rich experience in the field of extraction of biologically active substances from plants using $scCO_2$, pressurized liquids and conventional solvents. To increase added value of extracts, the current research is focused on various applications of $scCO_2$: extract micronization, impregnation, fractionation on sorbents and modification using enzymatic reactions.

Link to the home page of the Laboratory/Company:
http://labsfe.icpf.cas.cz/
http://www.icpf.cas.cz/

Fields of expertise:
- Supercritical fluid extraction
- Solubility in supercritical CO_2
- Enzymatic reactions of oils in $scCO_2$
- Mathematical modelling of related processes

5 Main publications or patents:
- H. Sovová, R.P. Stateva, New developments in the modelling of carotenoids extraction from microalgae with supercritical CO_2. J. Supercritical Fluids 148 (2019) 93-103.
- H. Sovová, Broken-and-intact cell model for supercritical fluid extraction: Its origin and limits. J. Supercritical Fluids 129 (2017) 3-8.
- H. Sovova, A. Nistor, M. Topiar, J. Kosek, Vitrification conditions and porosity prediction of CO_2 blown polystyrene foams. J. Supercritical Fluids 127 (2017) 1-8.
- H. Sovova, M. Sajfrtova, M. Topiar, Supercritical CO_2 extraction of volatile thymoquinone from Monarda didyma and M. fistulosa herbs. J. Supercritical Fluids 105 (2015) 29-34.
- H. Sovová, M. Zarevúcka, P. Bernášek, M. Stamenić, Kinetics and specificity of Lipozyme-catalysed oil hydrolysis in supercritical CO_2. Chem. Eng. Res. Des. 86 (2008) 673-681.

Collaborations:

Institute of Chemical Engineering, Bulgarian Academy of Sciences, Bulgaria

Facilities:

- 4 laboratory and 1 pilot plant for supercritical fluid extraction and fractionation (interchangeable extractors of volumes from 4 to 1.5 L and with maximal operating pressure 69 MPa)
- laboratory plant for pressurized liquid extraction
- laboratory instruments for enzymatic and chemical reactions in supercritical carbon dioxide
- laboratory apparatus for particle design using supercritical CO_2 (RESS, SAS)
- laboratory apparatus for polymer foaming
- high pressure columns for preparative supercritical chromatography/supercritical adsorption
- high-pressure view cell equipped with sapphire windows