



COST ACTION GREENERING – DATA COLLECTION

First name(s), Family Name(s): Jacques Fages

Type (Academic or Industrial): Academic

Country: France

Leadership position in the COST: MC substitute on CA18224

Working Group in which you are involved: WG3

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Laboratory/Company: RAPSODEE – IMT Mines Albi – UMR CNRS 5302

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Laboratory/Company info: RAPSODEE is a chemical engineering laboratory of about 100 persons. It is a joint unit between IMT Mines Albi (French engineering school) and the CNRS. RAPSODEE carries out research in the field of renewable energies and in the field of powders, health and nutrition. Valorization of waste and biomass and particulate solids engineering applied to advanced galenics and agrofood industry are the main domains of investigation.

Link to the home page of the Laboratory/Company:

<https://www.imt-mines-albi.fr/rapsodee>

Fields of expertise (limited to 400 characters):

- Design and development of new sustainable processes: more intense, more economical, more respectful, safer
- Hydrothermal valorisation of biomass
- Measurement and modelling of physical properties under high pressures, including in microfluidics and with ionic liquids
- Materials with controlled properties
- Processes using renewable energies (solar, biomass).
- Processes using supercritical CO₂: extrusion-foaming, microencapsulation, particle generation and design...

5 Main publications or patents:

- Déniel M, Haarlemmer G, Roubaud A, Weiss-Hortala E, Fages J. **2016**. Energy valorisation of food processing residues and model compounds by hydrothermal liquefaction. *Renew. Sust. Energ. Rev.* 54: 1632-1652. <[hal-01609027](#)>
- Chauvet M, Sauceau M, Fages J. **2017**. Extrusion assisted by supercritical CO₂: A review on its application to biopolymers. *J. Supercrit. Fluids* 120 (2): 408-420. <[hal-01335023v2](#)>
- Mouzaoui M, Baudez JC, Sauceau M, Arlabosse A. **2018**. Experimental rheological procedure adapted to pasty dewatered sludge up to 45 % dry matter. *Water research.* 133: 1-7. <[hal-01678197](#)>



- Resende de Azevedo J, Espitalier E, Ré MI. **2019**. Ultrasound assisted crystallization of a new cardioactive prototype using ionic liquid as solvent. Ultrasonics sonochemistry 55: 32-43. <[hal-02079415](#)>
- Hijazi N, Le Moigne N, Rodier E, Sauceau M, Vincent T, Benezet JC, Fages J. **2019**. Biocomposite films based on poly(lactic acid) and chitosan nanoparticles: elaboration, microstructural and thermal characterization. Polymer Engineering & Science. E350-E360; <[hal-01924005](#)>

Collaborations:

Numerous collaborations both academic and industrial in France and abroad (Japan, USA, China, Europe, ...)

Facilities:

- Several equipments to work under high pressure: autoclaves, lab-size and pilot supercritical CO₂ devices, high pressure pumps, extruder equipped with gas-injection, ...
- Galenical formulation apparatuses: prilling, twin-screw extruder, spheroniser, granulators, dry coating device, grinders,...
- Specific experimental facilities to implement several biomass processines: torrefaction, gasification, pyrolysis, liquefaction,...
- Thermal and physico-chemical characterization: DSC, TGA, calorimeter, DVS, laser diffraction, SEM, X-ray, Raman, pycnometry, gas adsorption, atomic force microscopy, ...