

Post-doc position in *ab initio* biomass thermoconversion modeling

Objectives and approaches

A post-doctoral position is available within the Chemical Engineering Laboratory of ENSTA ParisTech.

The research aims at developing novel design tools for biomass conversion processes by accounting precisely for the coupling between chemical kinetics and transport phenomena. Starting from a semi-empirical biomass decomposition mechanism, an *ab initio* study of the key chemical reactions affecting hemicellulose decomposition in liquid phase will be carried out to get a predictive chemical kinetic mechanism. Activity coefficients will be obtained using the COSMO-SAC model.

As a collaboration with the Process Engineering and Materials Laboratory of CentraleSup lec, these thermochemical data will be implemented in a multiscale reactive flow code describing heat and mass transfer inside biomass particles as a function of local conditions. This design tool will be validated against experimental data (TGA/DSC + GC-MS) over a range of biomass particle sizes.

Skills and applications

The desired profile obtained a PhD in physical chemistry with excellent skills in computer programming. The appointment is for one year.

The interested post-doc candidates should send their curriculum vit e, publication list and cover letter to the following contacts by e-mail before September 15, 2017.

Contacts

andre.nicolle@ensta-paristech.fr

julien.colin@centralesupelec.fr

About the host laboratories

ENSTA ParisTech (828, boulevard des Mar chaux 91120 Palaiseau) belongs to the foremost graduate schools of engineering in France. Its Chemical Engineering Laboratory has a specific expertise in the thermochemical modeling of complex solutions, combustion kinetics as well as thermophysics.

CentraleSup lec (3, rue Joliot-Curie 91190 Gif-sur-Yvette) is an internationally-reputed Higher Education and Research Institution. Its Process Engineering and Materials Laboratory has a recognized expertise in modeling and experimentation for sustainable bio-processes intensification.

Both laboratories are installed on the new Paris-Saclay campus.