

6-months trainee position

*Centre for Materials Forming (CEMEF) of MINES ParisTech
Sophia Antipolis, France*

Project title: “Bio-aerogels”

Aerogels are ultra-light, highly porous and nanostructured materials and the most known ones are based on silica. *Bio-aerogels* are a new generation of aerogels that are fully biomass-based (usually polysaccharide-based) which opens up a lot of potentials in biomass valorisation and making new functional bio-materials.

The applications of bio-aerogels are numerous: recently we demonstrated that bio-aerogels can be very efficient thermal super-insulating materials, and because polysaccharides are biocompatible and biodegradable, their aerogels can be used in biomedical (scaffolds) and pharmacological (controlled release) fields.

The goal of the work is to prepare aerogels based on a selected polysaccharide, to characterise them and to understand and correlate the structure of polysaccharide with aerogel morphology/porosity and properties. Functionalisation of gels and aerogels will also be considered.

The work will involve the use of many techniques, including formulation, rheometry, optical and electron microscopies and aerogel characterisation (density, specific surface area, morphology by high-resolution SEM).

Work environment

The student will work in the Centre de Mise en Forme des Matériaux (Center for Materials Forming or CEMEF), located near Nice (Alpes Maritimes). CEMEF is engaged in the study of the formulation, processing and properties of materials that associates physics, physical chemistry, mechanics, thermodynamics and modelling. CEMEF is dealing with synthetic and natural polymers, and their composites and nanocomposites. CEMEF has strong research activity in the study and development of new biomass-based materials including cellulose dissolution and solutions, composites reinforced with natural fibres, bio-aerogels and bioplastics.

Keywords: polysaccharides, gels, aerogels

Skills: polymer chemical physics (with the background in polysaccharides), fluent in English, capability to work in group, motivation and sense of initiative and capability to report regularly on his/her work.

Duration: 6 months, starting any time from January 2017

Stipend: 550 euros/month

Location: Sophia Antipolis, France

Application:

The position is for an undergraduate student, at the level of Master degree. Please send your CV, your marks from the last two years and a recommendation letter or email of a reference to: Tatiana Budtova, Directeur de recherche in Mines ParisTech

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