

Master position “Short fiber reinforced all-cellulose composites”

in the frame of “ALL-CELL” FiDiPro project

“From ultra-light to ultra-strong all-cellulose composites via “green” processing”

Aalto University, Helsinki, Finland

Project description

A Master position is opened within Finnish Distinguished Professor grant awarded to prof. Tatiana Budtova from the Centre for Materials Forming (CEMEF) of MINES ParisTech, France, to develop all-cellulose composites topic in Aalto University, School of Chemical Technology, Department of Bioproducts and Biosystems. The project is performed in close collaboration between Aalto University, large Finnish pulp and paper companies and SMEs.

The overall goal of the ALL-CELL project is to use the eco-design approach to prepare all-cellulose composites and nano-composites using various types of cellulose fibres, from wood fibres “as is”, pulp and paper and textile waste to man-made cellulose fibres and nanocellulose for making new mechanically strong biobased materials. New generation of “green” cellulose solvents, such as ionic liquids and aqueous NaOH are be used.

Objectives and scope of the work

Master project will devoted to the preparation and characterisation of all-cellulose composites reinforced with short cellulose fibers. The work will include experimental formulation of all-cellulose composites, characterisation of the materials obtained on micro and macro level, understanding the correlations between process parameters and material properties (morphological, mechanical) and, potentially, functionalisation of fibres and composites. The work will be performed in a close collaboration with a PhD student working in this area.

The project will be carried out at the Aalto University, School of Chemical Technology, Department of Bioproducts and Biosystems, Biorefineries Research Group. Department laboratories are equipped for the preparation, pre-treatment and fractionation of any type of lignocellulosic material. All relevant methods for the characterization of polymers and composites are available.

Required skills: polymer chemical physics with specialisation in polysaccharides; fluent in English.

For the application, please submit the following documents to prof. Tatiana Budtova tatiana.budtova@aalto.fi:

- Your CV
- Your marks from the last two years
- A recommendation letter or reference

The position is opened at any time. Please note that no salary or stipend is provided.