IMT Lille Douai
École Mines-Télécom
IMT-Université de Lille

ARMINES

POSITION OPENING

POST-DOCTORAL RESEARCHER

"Advanced thermoplastic matrix-based composites: Optimization of manufacturing process"

General description

Development of new thermoplastic matrix composites has to fulfill short term manufacturing times while ensuring high part quality. IMT Lille Douai is a well-known research center on composites manufacturing processes optimization and is currently involved with academic and industrial partners in a FUI collaborative project, DESTINY, lead by Stelia Aerospace Composites company, is dedicated to the development of fire resistant thermoplastics composite for aeronautic & railway interior parts with good impact and ageing behavior as well as easy recyclability. In this project, IMT Lille Douai proposes to investigate the RTM (Resin Transfer Molding) process where the liquid resin is injected through the dry preform previously placed in a closed mold and to define the process parameters that would ensure the best part quality (low residual porosity) and short injection cycles.

In this context, IMT Lille Douai seeks for a post-doctoral researcher who is supposed to conduct the experimental work using the RTM process and the materials involved in the project.

Objectives

The missions of the post-doctoral researcher are to investigate the influence of manufacturing parameters on the final properties of the composite parts, principally following a wisely selected manufacturing plan and by conducting porosity measurement on the final parts. Specifically, the post-doctoral researcher shall characterize the permeability of the textile reinforcements, the reactivity and rheology of the different acrylic resins. Then, different levels for the main process parameters such as injection pressure, temperature, injection strategy and vacuum levels should be defined and parts should be produced on a simple mold definition and using the POPCOM manufacturing platform (https://youtu.be/ZF5E9gUmaxM). The impact of mold geometry will then be evaluated on a demonstrator and validated through process modelling and simulation.

Profile

Degree: PhD in Mechanical Engineering or Materials Science of Composite Materials.

Skills and knowledge:

- Strong background of the composites manufacturing processes
- Solid expertise in the liquid composite molding processes (thermoset and/or thermoplastic resins)
- Profound knowledge in fluid mechanics (in particular, flow in porous media and microfluidics) and polymer rheology
- Experimental skills for textile reinforcement characterization (permeability, micrography)
- Competency in numerical simulation
- Working language : French and/or English

Conditions

The intended **starting date is March 2019 at the earliest and no later than mid-April 2019**. The duration of the contract is **12 months** (temporary/fixed-term contract i.e. ''CDD'' in French term; employed by ARMINES; monthly gross salary will be commensurate to experience with a minimum of about 2 700 euros).

Applicants should (preferably via e-mail) send a letter of motivation with curriculum vitae, a description of research work, a list of publications, and a couple of letters of recommendation to:

Prof. Eric Lafranche and Dr. Mylène Lagardere, Département Technologie des Polymères et Composites & Ingénierie Mécanique, IMT Lille Douai, 941 rue Charles Bourseul, CS 10838, 59508 DOUAI, France
Tel: +33 (0)3.27.71.21.76, Fax: +33 (0)3.27.71.29.81, e-mail: eric.lafranche@imt-lille-douai.fr ; mylene.lagardere@imt-lille-douai.fr **with copy to HR department**: jobs@imt-lille-douai.fr
http://www.imt-lille-douai.fr