

CALL FOR INTEREST MSCA POSTDOCTORAL HOSTING OFFER

Postdoc position at the University of Bordeaux
Design by topological optimization of natural based materials
(Fixed Term)

Research environment

Applicants are invited for a Postdoctoral research position in the group of [Pr. Anita Catapano](#) (Leader of research in the field mechanical and engineering design), [Dr. Regis Pommier](#) (Head of the [E2WP* Chair dedicated to wood processing](#)), Pr. [Marco Montemurro](#) (leader of research in topological optimization) and [Laurent Castets](#) ([Gascogne](#): Large company research leader) at the [Institute of Mechanic and Engineering \(I2M\)](#), [University of Bordeaux](#), to carry out fundamental and technical research in the field of computational modelling and optimization of solid wood by NURBS topological optimization.

I2M is a highly interdisciplinary research Centre addressing the challenges and opportunities posed by engineering and computational design developments. This Post-Doc position is situated within the Kinds of Modelling of Composites Materials and Structures, Modelling of anisotropic/ Heterogenous Materials research program and its generalisation to natural based solutions for materials.

Localisation: I2M/ENSAM – Esplanade Arts et Métiers, F-33400 Talence

Gascogne Bois, France's leading multi-specialist wood operator. With one of the largest sawmill capacities in France, Gascogne Bois has become the leading supplier of wood for pallets and packaging and a key player in the indoor and outdoor wood for joinery. For this specific application, a modern line is dedicated to the maritime pine and completely automated: the sorting, cutting and finger-jointing line allows a rigorous selection of our products qualities which are then joined in dish or in fields before the production of glued laminated timber

products. The company is equipped to a living lab in scale 1 of the product to ensure the direct development of the results in products.

Localisation: Gascogne Bois – Route de Cap de Pin, F-40210 Escource

Research project

The wood sector is a strategic issue in the field of the sustainable development; positive carbon furniture's, but the non-solutioning challenge is to ensure mechanical and physical stability performances of wood products by solid wood assembling solutions.

To this purpose a pioneering multi-scale modelling strategy has been developed to properly determine the elastic properties (including associated variability) of the wood material at micro and meso scale. The objective of this Post-Doc is to integrate these models into a material topology optimization strategy considering local and global buckling response of the structure. The topology of the fibers of wood induce its behavior who can be controlled by different types and orientations of assembling. The work will define the topology of fibers and the optimized assembling of sample of wood expected together with the development and use of tools for advanced quantitative engineered products. Experimental analyses by digital image correlation of glue laminated and finger jointed wood will validate the optimized solutions.

Successful candidate

You should have (or be about to achieve) a PhD in a relevant field and should provide strong evidence of potential for research and publication at the highest level, as well as strong interest in engagement with the Computational Mechanics.

Candidates are expected to have experience in the following areas:

- **PhD on Mechanics;** Topic of PhD Thesis: Modelling of Composites Materials and Structures, Modelling of Anisotropic/Heterogenous Materials
- **Technical Skills:** FE modelling on Ansys and/or Abaqus, Programming languages Python and/or Matlab and/or Fortrant and/or C++, dynamical and/or finite element modelling. Software development in C++ and/or Python will be.
- **Other:** driving licence ; knowledge in wood science would be a plus

Funding and application process

The position will be funded under the “MSCA Postdoctoral fellowship” scheme (in case of successful application), for 2 years.

This call for interest is a 2-step application:

- first, identifying the eligible candidate suitable for a MSCA application
- then, application process through the European Commission’s platform

To be considered as eligible, candidates must abide by the following criteria:

- max. 8 years of research experience after their doctorate
- having spent or worked in France less than 12 months in the past 3 years

[>> To know more about the MSCA programme](#)

Your application consists in CV + cover letter. Please send them to regis.pommier@u-bordeaux.fr (and service.europe@xylofutur in copy).

Application deadline: August 1st

Work environment

The laboratory is situated in Bordeaux (South Western France), two hours by train from Paris, near the [Atlantic ocean](#) and one of the famous touristic place in the word. Some travels will be organized to the company in the center of [Landes de Gascogne regional natural park](#).

Contact

For any questions related to the project and work environment, please contact Régis Pommier: regis.pommier@u-bordeaux.fr

For any questions related to the MSCA-PF funding scheme, please contact Bérénice Kimpe: berenice.kimpe@xylofutur.fr