



1-year Postdoc offer (18 months)

Micromechanics modeling the mechanical behavior of thermoplastic matrices filled with carbon fibers

During this postdoc, we will look at the relationship between the microstructure and the mechanical behavior of composites made of a thermoplastic matrix filled with carbon fibers. The composites of interest are used for the design of hydrogen tank.

Three different matrices will be considered. The matrices as well as the composites will be tested in the lab in linear elasticity and linear viscoelasticity. Tests in situ using micro tomography is also envisioned.

A three-dimensional micromechanics approach, yet to be wisely chosen, will be used in order to reproduce or even better predict the mechanical responses of the composites. The candidate is expected to work mostly on the modelling part but will have to run experiments to validate the modeling effort. This postdoc position is supported by the Industrial chair *Design and modeling of innovative materials* between Arkema and Ecole Polytechnique, IP Paris, and the candidate will benefit from interactions with the industrial partner.

The candidate will work full time at LMS, laboratoire de Mécanique des Solides, in Ecole Polytechnique, IP Paris. He/She will be supervised by Julie Diani (<https://www.polytechnique.edu/annuaire/fr/users/julie.diani>). She/He will benefit from a dynamic lab environment which will expose her/him to many topics on materials and mechanical engineering.

Some experience in micromechanics modelling of materials and either finite element simulations or FFT homogenization calculations are required. If interested by the position, please contact Julie DIANI julie.diani@polytechnique.edu.

The postdoc can start as early as April 2022.