

3 PhD positions in Computational Mechanics in Belgium and Luxembourg

The project

Profs Thierry J. Massart (Universite Libre de Bruxelles), Ludovic Noels (Universite de Liege) and Stephane P.A. Bordas (University of Luxembourg) have recently been awarded a joint research project by the FNRS and FNR. The project focuses on the mechanical behavior of discrete metallic materials, such as metal foams and printed metallic structures (see Fig. 1). Stochastic variations of the mechanical behavior such as the yield strength and the ultimate strength are considerably influenced by the variations of the strut connectivity and the variations of the geometrical and material parameters of individual struts.

In this project, beam models and 3D finite element models will be developed to model the mesostructure of metal foams and printed metallic structures. An important part of the work will furthermore focus on multiscale methodologies to upscale the mesostructural models, including their variations, to allow macroscale (engineering-scale) computations.

A separate post-doctoral researcher (who is already identified) will focus on experimental methodologies that will be used to calibrate the mesostructural models and validate the mesostructural models and multiscale methodologies to be developed by 3 PhD students.

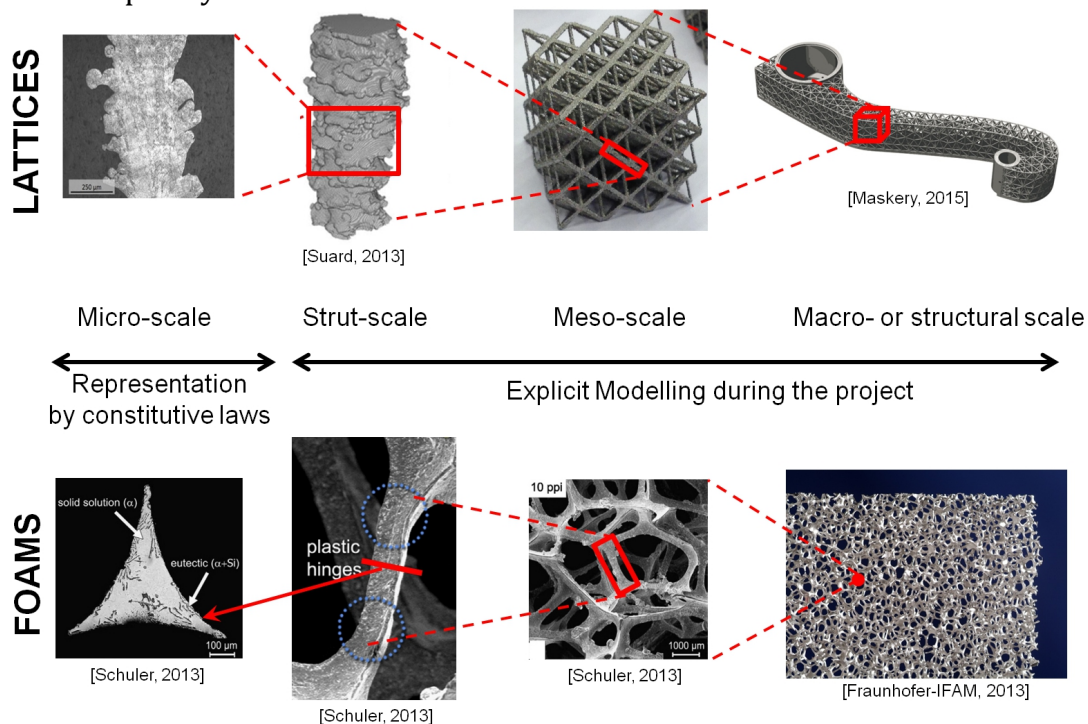


Figure 1: The length-scales of discrete metallic materials. Top: printed metallic lattices, bottom: metal foams.

The available positions

We are looking for 3 PhD students to develop the computational models for discrete metallic materials. Their work will comprise the developments of (i) a mesostructural model in which each strut is represented by a series of beams, (ii) a mesostructural model in which each strut is modeled continuously by 3D

finite elements, and (iii) multiscale methodologies to upscale the mesostructural models including their variations to enable efficient engineering-scale, stochastic computations.

Each PhD student will receive a 4-year contract and hence, has 4 years to successfully finish her/his PhD studies. Each student will be employed by one of the three involved universities, but she/he will also spend at least 1 year at one of the other two universities. Depending on their interests, the PhD students have the possibility to be involved in some experimental work, but their main focus will be the development of the computational models.

Are you a possible candidate?

We are looking for holders of an MSc title (or who will receive their MSc title before the start of the project) or students who have received at least 300 ECTS. Candidates should have a sincere interest in mechanics of materials and computational mechanics. All computational models will be implemented from scratch, so you should be interested in numerical methods and programming and preferably have experience with both. Typically, we would like to see applicants who have studied Aerospace, Mechanical and Civil Engineering and Applied Mathematics. On the other hand, applicants should take into account that their interest and experience with mechanics of materials and computational mechanics is the most important for us.

Start: October 1, 2016.

If you are able to start one or two months later, we may still consider you. Earlier is not possible.

Do you want to apply?

Send one *combined* email with your application letter and CV to *all* of the following email addresses:

l.noels@ulg.ac.be (Prof Ludovic Noels, University of Liege)

thmassar@ulb.ac.be (Prof Thierry J. Massart, Universite Libre de Bruxelles)

lars.beex@uni.lu (Dr Lars Beex, University of Luxembourg)