

## Post-doctoral Research Fellowship Opportunity

**Position:** 1 year (Labex SEAM) opening in December 2018

**Location:** LSPM-CNRS, Université Paris13, Villetaneuse

**Deadline for applications:** November 2018

**Project title:** Modeling of cracking and buckling in thin films and nanostructures on stretchable substrate.

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**Project description:** The project MECAMAG, involving LSPM (PI: Dr Damien Faurie) and ITODYS Labs, aims at optimizing nanometric magnetic systems deposited on polymer based flexible substrates. The main potential applications concern the field of flexible electronics, such as flexible magnetic field sensors, flexible magnetic memories and high-frequency devices. The main issue is to understand the effects of large deformations (very large in the targeted applications) on the functional properties. It is therefore crucial to optimize adhesion between nanofilms or nanostructures on polymer substrates, and to predict or even better limit the cracking and/or interfacial decohesion phenomena.

During this Postdoc, phase field modeling will be used to describe the multiple cracking phenomenon and subsequent localized buckling usually reported in thin films on stretchable substrate. We will study the evolution of crack patterns and buckles and the associated stress and strains fields in the film and substrate. Moreover, we will study the effect of lateral structuration on these phenomena.

**Context:** The numerical work will be carried out at LSPM laboratory, which have a strong interest for the development of analytical and numerical methods to describe the mechanical properties of materials submitted to high strains (fracture, buckling)

**Job profile:** Applicants should have a PhD degree in Mechanics and skills on numerical modeling of fracture or buckling, ... Previous experiment in phase field modeling would be appreciated.

**Eligibility criteria:**

- The applicant must have defended the PhD thesis after January 2015 in another laboratory than LSPM.
- Please provide a full CV, 1 recommendation letter per laboratory (of PhD or previous post-doc) and a list of all the publications and communications.