

# Postdoctoral Researcher Position in the Soft Matter and Chemistry Laboratory (ESPCI Paris) and the PASTEUR Laboratory (ENS Paris)

<https://wwwdev.spip.espci.fr/fr/espci-paris-psl/emploi/archives/2016/postdoctoral-researcher-position-in-the-soft-matter>

## Laboratories Description :

ENS Paris and ESPCI Paris are major French institutions of higher education, with internationally renowned research centers in the fields of physics, chemistry and biology. The Biophysical Chemistry group of the PASTEUR laboratory at ENS develops photophys(chem)ically active organic probes for various applications at the triple interface between Biology, Chemistry, and Physics. The Soft Matter and Chemistry laboratory at ESPCI mainly focuses on the design, synthesis and study of polymeric and supramolecular materials. The laboratory is known for conducting fundamental research inspired by or oriented towards industrial applications.

## Project Description :

This joint project between the Soft Matter and Chemistry Laboratory at ESPCI Paris and the Biophysical Chemistry group at ENS Paris is aiming for the development of materials with new functionalities obtained through a combination of inventive molecular and macromolecular design with on-demand organization on different time and space scales. The project will focus on photo-reversible nitroso chemistry and macromolecular engineering to produce autonomous or light triggered self-repairing polymeric coatings and materials. A first challenge will be to design and synthesize polymer networks that will allow for efficient autonomous and/or light triggered healing when mechanical damage occurs. Both elastomeric and thermoplastic materials will be aimed for. A second challenge will be to correlate molecular dynamics and stimuli responsiveness with the bulk properties of the materials. The gained knowledge should allow adjusting the macromolecular engineering of the systems (composition, topology, functionality) as a function of targeted properties. This project will cover the synthesis and the photo-chemical characterization of polymer matrices containing nitroso units to obtain photoresponsive and self-healing materials and coatings. In depth molecular and material characterization will be performed (chemical : NMR, IR, SEC,...; physical and mechanical : DSC, DMA, rheology, tractions, ...). The healability of the material will also be assessed by physico-chemical characterization and mechanical testing.

## Knowledge and skills :

A polyvalent profile at the interface of photochemistry and polymer chemistry is sought for. Experience and experimental skills in polymer synthesis and/or material characterization will be real assets.

## Recruitment terms :

Principal Investigators : Renaud Nicolaÿ (Matière Molle et Chimie, ESPCI Paris PSL Research University), Ludovic Jullien (Ecole Normale Supérieure PSL Research University, Department of Chemistry, PASTEUR Laboratory, 24, rue Lhomond, 75005 Paris, France; Ludovic.Jullien@ens.fr) Starting date : October-December 2016 Duration : 18 months Gross Salary : 55 k /year Please submit an updated Curriculum Vitae and provide references.



## Contact

Nom : Renaud Nicolay Mail : [renaud.nicolay@espci.fr](mailto:renaud.nicolay@espci.fr) Candidatures (lettre de motivation et CV) à transmettre par courrier électronique.

## Accès

Métro ligne 7 (Place Monge/Censier Daubenton) RER B (Luxembourg) Bus 21, 27 & 47 3 stations Vélib proches

Poste pourvu