

Post-doctoral Researcher Position (12 months)

Position Description: The IMMM CNRS Institute UMR 6283 at Le Mans University is seeking an outstanding, highly motivated candidate for a postdoctoral researcher opening working in the field of **polymer science**.

Prospective candidates should have a strong background in Polymer science, specifically in the understanding of thermo-mechanical properties of polymer materials. Experimental skills in Scanning Probe Microscopy will be welcomed.

Strong written and verbal communication skills are required for this position, especially in the context of a highly multidisciplinary topic within the collaborative project.

The position is available in January 2022 for one-year postdoctoral fellowship within the framework of the collaborative ANR project PHOTOPRINT coordinated by Le Mans University. Teams associated to this project are : IRDL (Lorient), IPREM (Pau), LCN (Mons – Belgium)

Scientific context: Recently, it has been shown that when azobenzene derivatives are incorporated in a polymer matrix or grafted on polymer backbones (i.e. **azopolymer**), the reversible *trans-cis* photo-isomerisation of the azobenzene moiety induces a **reversible change of the mechanical properties** of the material called Reversible Solid to Liquid Phase Transition (RSLPT).^[1] Since then, the possibility to reversibly obtain a liquid state even after terminating light irradiation, has become an emerging research field in materials science and technology because of its potential applications. However, the factors affecting the RSLPT and its mechanism are still under debate.^[2] In order to understand and control the reversible properties of the materials, a systematic study of the influence of the azobenzene group architecture, chain length on the photo-reversible properties has to be performed. It has been shown that *In situ* Atomic Force Microscopy (AFM) based techniques have a great potential to study the evolution of the adhesion and the viscoelastic properties of the materials under irradiation.^[3]

Main responsibilities: Developing the characterization methods of the mechanical properties under irradiation. Redaction of manuscripts and reports, publication and presentations in English of the research results in the framework of the consortium.

Information: Interested candidates are encouraged to contact Pr. Nicolas DELORME, leader of the Photoprint ANR project, by email at nicolas.delorme@univ-lemans.fr
Please include a CV, brief description of research interests, and contact information for two professional references.

[1] H. Zhou, C. Xue, P. Weis, Y. Suzuki, S. Huang, K. Koynov, G. K. Auernhammer, R. Berger, H.-J. Butt, S. Wu, *Nat Chem* **2017**, *9*, 145-151.

[2] W.-C. Xu, S. Sun, S. Wu, *Angewandte Chemie International Edition* **2019**, *58*, 9712-9740.

[3] N. Delorme, M. S. Chebil, G. Vignaud, V. Le Houerou, J. F. Bardeau, R. Busselez, A. Gibaud, Y. Grohens, *Eur. Phys. J. E* **2015**, *38*, 56.