

LCPO

Laboratoire de Chimie
des Polymères
Organiques

université
de **BORDEAUX**

Ph.D. Position – University of Bordeaux FRANCE

Photo-Induced Carbonate-Amine Polyaddition for the On-Demand Synthesis of Non-Isocyanate Polyurethanes (PICADDILY)

Job offer

Photopolymerization is one of the most promising technologies for the advanced manufacturing of polymers. It is a flexible method meeting the latest demands of Industry 4.0, notably with the breakthrough of 3D-printing by stereolithography (SLA, DLP). If the field has long been dominated by radical chemistry, it is currently experiencing a regain of interest for step-wise photopolymerizations based on radical-free reactions. In this exciting scientific context, the idea of the PICADDILY project is to develop a photo-polyaddition reaction enabling the synthesis of Non-Isocyanate Polyurethanes (NIPUs). The polyaddition of 5-membered cyclic carbonates (5CCs) and amines is arguably the most promising reaction for the synthesis of NIPUs. But the study of the 5CC-amine reaction has always been restricted to thermo-activated approaches. The idea here is to introduce the 5CC-amine chemistry to the field of photo-chemistry. A toolbox of tailor-made monomers and photocatalysts will be conceived to address this challenge. This multi-disciplinary project lays at the frontiers of photo-chemistry, polymer science and 3D-printing technology. It has the ambition to produce high-impact research articles and it is fully funded by the French Agence National de la Recherche ([ANR](#)).

The Ph.D. candidate will work within the Laboratoire de Chimie des Polymères Organiques ([LCPO](#)), one of the top-tier center of polymer science in France, located on the campus of the University of Bordeaux. The research activities of the laboratory span the whole range of modern polymer science. It aims at the design of functional high value-added polymers and the study of their macroscopic properties for target applications, in particular in the domains of life sciences, energy and chemical engineering. The LCPO offers a stimulating workplace for anyone who wants to gain a top-level training in polymer chemistry.

Candidate's profile

We are looking for a highly motivated student holding a Master degree in organic and/or macromolecular synthesis. A know-how in photo-chemistry and/or 3D-printing would be a plus. Teamwork abilities and good skills in English are required.

Application

Applicants are invited to send a complete CV, a motivation letter and at least one recommendation letter to Thomas Vidil (thomas.vidil@enscbp.fr)

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