

Horizon Europe - Marie Skłodowska-Curie - Doctoral Networks  
ReBond: A Universal platform for recycling plastic waste using dynamic covalent bonds

### Doctoral Candidate 15

## Synthesis and properties of PS-PMMA copolymers containing reversible covalent crosslinks as compatibilizers in blends

*Bio and Soft Matter, IMCN, Université catholique de Louvain, Louvain-La-Neuve, Belgium ;  
Dept. of Physics and University Research Center of Ioannina, Institute of Materials Science and  
Computing, University of Ioannina, Greece.*

This PhD project is part of the European Doctoral Network 'ReBond', which involves eight Universities, five industrial partners and 15 PhD students. By combining the expertise of the different partners in synthesis, advanced characterization, linear and nonlinear dynamics, mechanical properties, modelling, and plastic product development and processing, we shall uncover the underpinning relationships among processing and performance of vitrimer-based recycled plastics and elastomers.

Within this framework, the specific objectives of this PhD are to compare the classical compatibilization approach of blends based on the use of copolymers to an approach using vitrimers, and to investigate the possibility of combining the two approaches. Blends of PS and PMMA have been chosen as model systems.

This experimental project will involve aspects of polymer synthesis, structural characterization by scattering techniques, and characterization of the dynamics by rheometry techniques and of the mechanical properties.

ReBond is a highly interdisciplinary and inter-sectorial project, the groups involved are world-leaders in their fields, and the tasks strategically designed to ensure strong synergies. It offers young researchers an extraordinarily diverse training platform with a deep grasp of soft matter and unique exposure to industrial environment, needed to address emerging scientific and technological challenges.

The applicant must have a Master's degree in polymer chemistry or physico-chemistry. Good knowledge in controlled radical polymerization is required. Additional knowledge in polymer physics or in rheology is a plus.

**Applications should be sent by email (a single pdf file containing a detailed CV, a transcript of marks obtained during the Master, a motivation letter, and the names of two referees) to: [rebond-manager@uclouvain.be](mailto:rebond-manager@uclouvain.be)**

**The applicant has to clearly indicate the number of the project(s) for which he/she is applying.**

**Starting dates: between October 2023 and December 2023**

**Project duration: 36 Months at UCLouvain (Belgium) and 12 Months at University of Ioannina (Greece)**