

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

## Doctoral Candidate 7

# The role of vitrimers on the viscoelastic response of polymer melts and blends under shear

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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 objective of this PhD will be to (i) determine how vitrimers influence the transient and steady nonlinear shear response of polymers, and (ii) investigate the influence of shear on the dispersion of vitrimers in polymer matrices and their possible re-arrangement upon shear cessation. To this end, appropriate rheometric protocols will be developed and specialized state-of-the-art tools will be used and/or modified appropriately as needed.

This project, which will be achieved in collaboration with the Université catholique de Louvain (UCLouvain), is mainly of experimental nature, but will require careful and rigorous analysis using advanced modeling.

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 engineering, material science or physics. Good knowledge of soft matter with emphasis on polymer physics is required. Basic understanding of rheology will be seriously considered. Additional knowledge in scientific programming or use of scientific packages 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: 24 Months at UOC (Greece) and 12 Months at UCLouvain (Belgium)**