

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

Doctoral Candidate 12

Modelling the nonlinear rheology of polymers in the presence of vitrimers

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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 specific objective of this PhD is to develop new molecularly based models for the nonlinear rheology of homopolymer melts with added vitrimers. Polymer blends will also be considered, starting from existing models developed for non-vitrimeric systems. The modelling activity will be validated against suitably designed experiments.

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 polymers physics and rheology is required. Additional knowledge in scientific programming and coding 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

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 UN (Italy) and 12 Months at UC (Greece)