Horizon Europe - Marie Sklodowska-Curie - Doctoral Networks

ReBond: A Universal platform for recycling plastic waste using dynamic covalent bonds

Doctoral Candidate 8

Viscoelastic properties of polymer blends in biaxial extension and the effects of compatibilizers

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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 develop new experimental setups to measure the biaxial extensional properties of polymer melts, based on bubble inflation and drop impact. Comparison with uniaxial extensional data will be performed. The extensional properties of polymer blends with and without vitrimers will be investigated,and interpreted in view of their structural characteristics.

This is an experimental project, that will be achieved in collaboration with the Centre National de Recherche Scientifique (CNRS).

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 and experimentation is required. Basic understanding of rheology will be seriously considered. Additional knowledge in scientific programming (data acquisition, signal processing) 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 UOC (Greece) and 12 Months at CNRS (France)