



Post doctoral position in the IMP laboratory as part of a partnership project with the TotalEnergies group

Title : High-value REcycled polymers produced from a combination of Flash Reactive Extrusion and in situ sol-gel Chemistry (REFRECH)

Background and research topic :

Recycling of polymers is a must for polymers to be accepted in the society. In terms of recycling, the closest is the loop, the better it is from an energetical, cost, ... point of view. So, if a polymer cannot be reused in its original use, its upcycling in another application via mechanical recycling becomes the best option. Transformation of polyolefins, using "smart" extrusion technologies (i.e. from mechanical recycling) into materials appropriate for high value application, has thus a lot of meaning.

Combining reactive extrusion and in situ sol-gel chemistry is a way to develop organic-inorganic hybrid materials. In the academic world, reactive extrusion and sol-gel chemistry are usually separately considered and this is understandable if clear scientific evidences must be provided. However, their combination in a sequence of extruders may evidently be considered as the two chemistries are, from many aspects, fully compatible regarding the role of the temperature and the modulation of sol-gel precursors.

Overall, this project aims to investigate the possible transformation of recycled polymer streams into high-value functionalized materials using a simultaneous combination of reactive extrusion and sol-gel chemistry

Candidate profile and skills

With a Ph D thesis, the candidate must have skills in the physical chemistry, including sol-gel chemistry, and processing of polymers.

Salary: €3300 gross/month

Send CV and covering letter to:

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