

Postdoctoral position on Recycling by design of multilayer packaging

We are looking for a highly motivated Postdoc to join our research group CVP at Clermont-Ferrand (<https://iccf.uca.fr/recherche/photochimie/cycle-de-vie-des-polymeres/>).

A number of projects that are ongoing in our group deal with environmental impact of polymer materials. The post-doc position will involve in TERMINUS H2020 European project, it concerns the recycling and reuse of flexible multi-layer and multi-compounds packaging materials used for food, beverages, cosmetics, pet food, fertilisers, any perishable goods in general. It will develop a range of smart enzyme-containing polymers with triggered intrinsic self-biodegradation properties, acting as adhesives or tie layers in the design and manufacturing of multi-layer plastics for food and non-food applications. The technology will be applied to biodegradable PUR-based adhesives for adhesive lamination and extrusion coating lamination, and polymers and tie layers (PBS, PLA, ϵ PCL, ...) in blown extrusion.

The work of postdoc scholar will involve around the lifetime durability and the recyclability of the selected multi-layer systems to be verified in an environment close to a recycling center along with re-processing of recycled materials. Works will be done to validate the triggered degradation of PUR-based adhesives and bio-based tie layers in a prototype device, optimisation of the environmental conditions and the prototype device could be needed for the triggered degradation of adhesives. After degradation, layers delamination for sorting and recycling of different films must be demonstrated. Delaminated layers will be analysed and characterized. Separated materials will be recycled in non-food applications by extrusion. Properties assessments (adhesion, ageing, mechanical, optical, barrier) will be used to assess the behaviour of the package with and without enzymes in use. Some works could be needed to modify the formulation of PUR-based adhesives, in order to accelerate the degradation rate.

Qualifications

The successful candidate must have a doctoral degree in Chemistry, Physics, Physical Chemistry, Materials Science, or equivalent with a focus on polymer science. Previous experience with recycling and rheology of polymer is a merit.

Further, practical experience with the processing of polymer materials is preferred. Previous exposure to materials characterisation tools such as thermal analysis (DSC, TGA), chromatography (HPLC, GC), optical microscopy, SEM, rheology, DMA and tensile testing is a merit. Due to the interdisciplinary nature of the work, the candidate is expected to have excellent collaboration skills. A very good capability of communicating scientific results in English, both orally and in writing is required.

Starting date

Fall 2019 or by agreement

Application procedure

The application should be written in English. It should be sent electronically and be attached as pdf-files, as below:

CV: (Please name the document as: CV, Surname) including:

- CV, include complete list of publications
- Two references that we can contact.

The application should be sent to:

haroutioun.askanian@sigma-clermont.fr

vincent.verney@sigma-clermont.fr

For questions, please contact:

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