Post-doctoral position in Organic Chemistry & Polymeric Materials (12 months)

Synthesis of ferulic acid derivatives and formulation of shape-memory polymeric implants for large bone defects regeneration

URD Industrial Agro-Biotechnologies (URD ABI) – AgroParisTech

CEBB – 3, rue des Rouges Terres 51110 Pomacle - https://urd-abi-agroparistech.com/Home/

The Industrial Agro-Biotechnologies Research and Development Unit (URD ABI) from AgroParisTech is located in the European Center of Biotechnology & Bioeconomy (CEBB) in the heart of the biorefinery of Pomacle-Bazancourt (near the city of Reims, in France). Our laboratory has an expertise in enzymatic catalysis and green chemistry as well as in polymeric chemistry. Recently we have conducted studies on the development of shape memory materials for biomedical applications.

The "PIMyBone" ANR project aims to develop bioresorbable implants for large bone defects regeneration. A part of the project is dedicated to the formulation of shape memory implants using lactic acid-based polymers, ferulic acid-based additives and mineral fillers (*i.e.* Hydroxyapatites, Calcium Phosphates). The main strategy will be to tune the glass transition temperature of the composites triggering the shape memory according to the temperature of the human body and regarding to the kinetic of the ageing process. Two work packages will be considered: i) synthesis of new biocompatible ferulic acid-based derivatives, ii) formulation and preparation of shape memory composites using extrusion and/or hot-melt processes. The recruited postdoc will propose new designs of additives and have to perform their synthesis. She/he will also have to set a design of experiments for the formulation of composites and to prepare them.

Thermal, mechanical, chemical and/or structural characterizations of the synthesized additives and of the prepared materials will have to be performed by the recruited post-doc. She/he will also have to present the results both in scientific committee of the project and at conferences, to write reports and publications.

Profile: The candidate should have a PhD in organic/synthetic chemistry and high knowledge related to polymeric materials. An experience in using extruder and/or hot-melt processes would be appreciated.

NB: As many travels are planned between our laboratory and the partners' laboratories, possessing a driver license is highly recommended.

The position is required for a period of 12 months starting September 2022.

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