URD Agro Biotechnologies Industrielles by AgroParisTech

Master 2 Internship Offer

Development of Biomass-Derived Polyesters with Functional and Bioactive Side Groups

URD Agro-Biotechnologies Industrielles (ABI) – AgroParisTech
Centre Européen de Biotechnologies et de Bioéconomie (CEBB)
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Located at the heart of the Pomacle-Bazancourt biorefinery, URD ABI AgroParisTech is a research and teaching unit of AgroParisTech dedicated to the valorization of agroresource and biorefinery byproducts. With expertise in white biotechnologies, green chemistry, and process engineering, the team works on multi-disciplinary research projects aiming at the development of new industrial processes allowing integrating the transformation of byproducts of agriculture into high value-added chemicals such as biopolymers, fine chemicals, functional additives or cosmetics.

Special considerations were recently directed in our research center to use cellulose-derived compounds as renewable alternatives to fossil-based chemicals in the production of polymers. We developed new biobased monomers containing various functionalities from commercially available molecules produced at an industrial scale. These monomers were successfully polymerized *via* different methods to afford a wide range of thermally stable polymers that can compete with the current fossil-based commodity polymers.

Driven by results, we are currently working on enlarging our library of monomers and polymers derived from renewable and commercially available molecules that can be extracted from natural feedstock such as cellulose, the main constituent of plant fibers and the most abundant organic compound on earth.

The internship has the following main objectives:

- The synthesis of new biomass-derived monomers with pendent functional groups.
- The polymerization of the monomers to produce polyesters having distinct but specific functionalities.
- Post-polymerization modification of the reactive polymers to release bioactive molecules or to produce new architectures with ameliorated properties for different applications.
- The polymers will be characterized by different analytical techniques including NMR, TGA, DSC, SEC and FT-IR.

The internship will start on February or March 1st (the latest) for a period of at least 6 months.
The candidate should be a master level student with a good knowledge in organic synthesis. Knowledge in polymer chemistry is highly desirable but not mandatory. She/he should have good analytical skills. High self-motivation and hard-work attitude are appreciated.

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