

## Master 2 Internship Offer

### Synthesis of Renewable Polymers from Phenolic Acids

URD Agro-Biotechnologies Industrielles (ABI) – AgroParisTech  
Centre Européen de Biotechnologies et de Bioéconomie (CEBB)  
3 Rue des Rouges-Terres, 51110 Pomacle

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.

Development of alternative polymers from sustainable resources have been conducted in order to limit the negative effects of massive production and usage of commercial polymers manufactured from depleting fossil sources. Among existing polymers, polyesters from biomass are attractive due to their renewable and degradable abilities. Many biobased monomer precursors have been commercialized including naturally-occurring phenolic acids.

The proposed internship focuses on the synthesis of monomers from plant-based phenolic acid derivatives, as well as their corresponding polymers *via* well-known polymerization methods. Characterization will also be conducted in order to provide a detailed profile of these biobased polymers.

The internship has the following main objectives:

- The design of eco-friendly and high yield production methods of monomers from renewable phenolic acids
- The polymerization of the synthesized monomers to produce new polymers (mainly polyesters).
- Measuring the greenness of the polymerization methods by sustainable metrics while considering the usage of safer solvents and chemicals.
- 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 1<sup>st</sup> (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 polymers (polyester, polyacrylate) is highly desirable but not mandatory. She/he should have good analytical skills. High self-motivation and hard-work attitude are appreciated.

Contact :

Dr. Sami FADLALLAH, sami.fadlallah@agroparistech.fr  
Mr. Thanh NGUYEN, thanh.nguyen@agroparistech.fr