Functional Bio-Hybrid Materials mimicking the English ivy leaf

This project aims to mimic the chemical composition and organization of biohybrid materials based on bio-colloidal particles into a natural polymer as matrix. The work will be dedicated to the design of physical or chemical interactions between both building blocks in order to optimize the self-assembly of the biohybrids during the aqueous media evaporation. The water-borne dispersion will be further used for film-forming application. The distribution and dispersion of the bio-colloidal particles in the film will be studied in relationship with its film-forming and photophysical properties.

This internship will allow the student to work on the elaboration of functional biopolymers by chemical modification and on their interaction/grafting with bio-colloidal particles. Soft chemistry will be favored with the use of water, as solvent. NMR & IRTF spectroscopies will be used to characterize the chemical modification of the building blocks and AFM/SEM/optical microscopies the film-formation and its surface/bulk organization.

Location: IPREM Institute at UPPA, Pau.

Duration: 6 months in collaboration with an industrial partner

Keywords : biopolymers, bio-colloidal particle, chemical modification/grafting, self-assembly, film-forming properties

Contact : Pr Laurent BILLON (Laurent.billon@univ-pau.fr)