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Centre de Recherches sur les Macromolécules Végétales
(CERMAV)

UPR 5301, associée à l'Université Joseph Fourier de Grenoble

„Glycopolymer Self-Assemblies: Sweet Nanoparticles and films“

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This presentation will be focused on ***Challenges at the Nanoscale Level in Oligosaccharides and Polysaccharides Systems***. The talk will emphasize on how to prepare nanoparticles and nanostructured films made from oligosaccharides or polysaccharides. During the past decades, a slight chemical modification, generally a link of few hydrophobic groups along the main polysaccharide backbone, induces a dramatic change on the structure and the dynamics of the modified polysaccharides: These are the so-called “Self-associative” systems at the origin of many industrial applications (food, cosmetic, oil recovery, medical,…). Today, the main challenge is to design new architectures molecule-based oligosaccharides or polysaccharides: “Glycopolymers”. Such systems exhibit a remarkable capacity to **self-assemble** into a great variety of macromolecular structures both in solution (nanoparticles) and bulk state (thick and thin films), whose dimensions span from few to hundred nanometres. Their final nano-organization results from the interaction between the molecular species and architecture, the block composition and, in the case of solution, the affinity of the solvent for the different blocks. In the bulk, the regular long range ordered structures are commonly used to create thin films and build new **controlled nanometer-sized** patterning materials, which found a number of key applications, spanning from pharmaceutical, biomedical engineering to microelectronics where the control at the nanoscale 2D and 3D level is of great importance. Some results on hybrid glycopolymer systems will be presented.

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