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FORMATION AND POLYMERIZATION OF PICKERING EMULSIONS STABILIZED BY MODIFIED CELLULOSE NANOCRYSTALS

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Pickering emulsions are based on amphiphilic particle stabilizers, which adsorb irreversibly at the liquid-liquid interface and form a rigid structure around the droplets. Amongst these particles, cellulose nanocrystals (CNCs) have demonstrated good performances as Pickering stabilizers for oil in water (o/w) emulsions in the presence of salt additives, or after chemical functionalization of the surface. In this work, a wide range of o/w emulsions of monomers were stabilized by amphiphilic modified CNCs. These Pickering emulsions subsequently serve as vessel to perform radical polymerization. In the first system, the CNCs are modified with a non-reactive moiety to tailor the hydrophobic/hydrophilic balance and the polymerization in the droplet is initiated by thermal radical initiator solubilized in the monomer. In the second system, the CNCs are modified with an ATRP initiator, in order to start the polymerization directly from the shell of the droplets to the center of the beads, in a controlled way. In this presentation, we will characterize both the emulsions and the corresponding latexes in a colloidal and polymeric point of view.

Biography

Arthur Werner is pursuing his PhD in Polymer Science at the University of Bordeaux. He obtained his Master's Degree in Physico-Chemistry (2015) and works now under the supervision of Dr. Gilles Sèbe and Dr. Valérie Héroguez. His area of interest is situated at the junction of colloidal and polymer sciences with a specification for Pickering emulsions based on cellulose nanocrystals.

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Recent Publications

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