

# FUNPOLYSURF

2016-2019



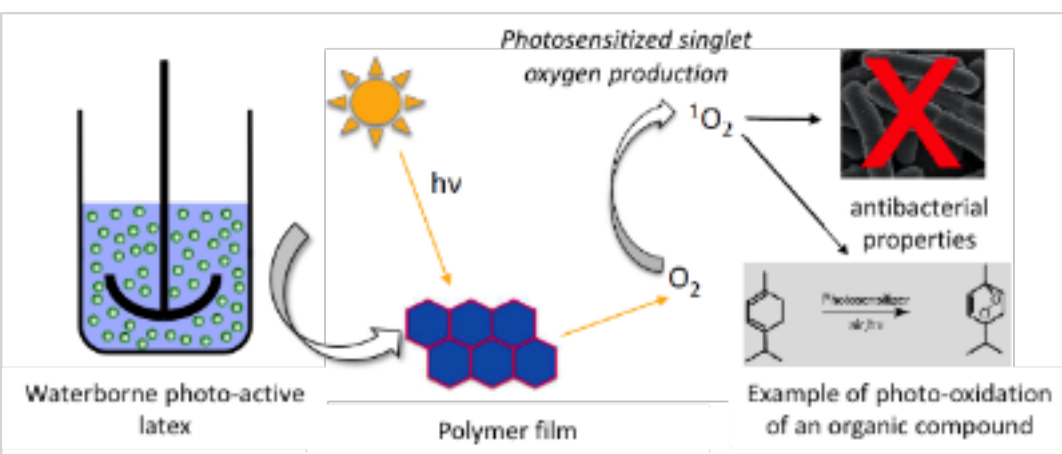
## Objectives

The innovation introduced by FUNPOLYSURF (design of advanced structured FUNctional POLymer SURfaces from photo-active polymer nanoparticles) project is the combination of innovative polymer chemistry and the characterization of their passive and active properties to produce novel photo-active coatings with mechanical properties compatible with an application.

The objective of the project is to produce novel advanced structured photo-active polymer films by simple casting from an aqueous dispersion of polymer colloids (=waterborne latex) For that purpose, the latex particles grafted with the organic photosensitizer units, will be synthesized by emulsion polymerization induced by copolymer self-assembly, an eco-friendly process free of solvent and surfactant. The originality of the project rests on three integrated pillars:

1. the controlled and versatile synthesis of the photo-active polymer particles by polymerization in aqueous dispersed media,
2. the characterization of the internal structure (by fluorescence microscopy, atomic force microscopy), the mechanical properties of the polymer films, which are important parameters to assess the application range,
3. the capability of the polymer coating to produce singlet oxygen under irradiation, investigated by specific singlet oxygen adapted to the solid/liquid interface. Singlet oxygen, produced in-situ from air by simple activation of organic photosensitizers by visible light is a powerful oxidant known for its antimicrobial activity.

The functional polymer coatings could find applications as surfaces for healthcare facilities or food packaging requiring antimicrobial properties. Singlet oxygen can also produce molecules of interest in the field of fine chemistry.



## Partners

- IPREM UMR 5254 CNRS/UPPA - Pau, FRANCE

- Sciences et Ingénierie de la Matière Molle (SIMM | ) , Soft Polymer Network Team, UMR 7615, CNRS, ESPCI, UPMC



Partenaire 1 – IPREM

Institut des Sciences Analytiques et de Physico-chimie pour  
l'Environnement et les Matériaux, UMR 5254



Partenaire 2 – SIMM

Sciences et Ingénierie de la Matière Molle,  
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