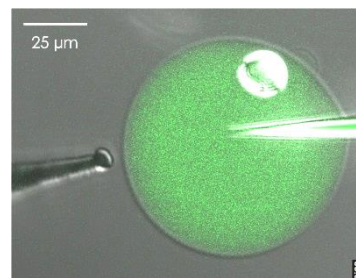




PhD Offer

Toward the development of an « artificial cell » : producing controlled biological reactions within compartmentalized liposomes

Our project is aimed at developing biomimetic systems and eventually build up an artificial cell. These systems are based on the synthesis of vesicles and liposomes, which membranes mimic living cell membranes. Within micrometric and nanometric vesicles, we plan to achieve biochemical and further biological reactions, involving enzymes or mitochondria, under full control. These aerobic biomimetic systems will produce autonomously reactive oxygen species (H_2O_2 , NO) and energetic molecules such as ATP. Generated products will be characterized by fluorescence microscopy and electrochemistry on single vesicles. We will search to integrate transporters in the membrane or to integrate smaller vesicles as dedicated compartment within each liposome. These biomimetic micro-reactors will allow to decipher some redox processes occurring in aerobic cells, including oxidative stress, but also to envisage applications in vectorization.



Keywords: Liposomes, enzymes, microscopy, micro-manipulation, membrane permeability

Applicant profile: physical chemistry, analytical chemistry, biophysics.

Financial support: application for a fellowship from the University of Bordeaux.

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