

# Journée iSiM 2021

## Rencontre inaugurale de l'iSiM

06 juillet 2021 > Amphi 25  
Campus Pierre et Marie Curie

### Matinée

09h00-09h15

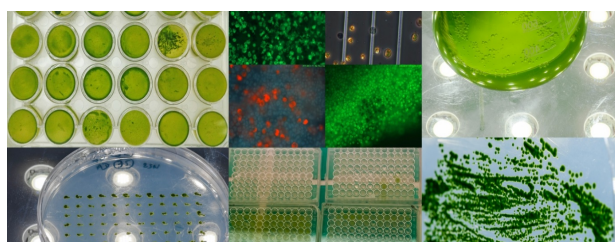
Présentation iSiM : Matthieu Sollogoub

09h15-10h00

Biologie synthétique, fixation du carbone et Biofonderie Sorbonne Université



**Abstract :** *Synthetic biology (SynBio) is emerging as a new discipline that aims at applying the principles of engineering to biological systems. SynBio allows to tackle fundamental and technological questions using new approaches based on both synthesis and analysis. Synthetic biology approaches developed to understand and engineer redox regulation and carbon fixation in the unicellular green alga *Chlamydomonas reinhardtii* will be presented. The project **Sorbonne University Biofoundry**, aimed at building a robotized synthetic biology platform to engineer bacteria, yeast and microalgae will also be presented*



Stéphane Lemaire (LCQB - SU)

10h00-10h15

Pause-café, installation des posters - Niveau Parvis - La sous barre 14/24

10h15-10h35

Design and evaluation of original heteroaromatic molecules as therapeutic agents and chemical tools for a better understanding of biological processes and networks  
Candice Botuha (IPCM - SU)

10h35-10h55

Molecular Complexity in Astrophysical Environments: Genesis of Complex Organic Molecules From Interstellar Dusts to Planetary Atmospheres  
Lahouari Krim (MONARIS - SU)

10h55-11h15

Switchable molecular tweezers: a versatile molecular machine to control multiple properties  
Guillaume Vives (IPCM - SU)

11h15-11h35 Emergence of Mesoionic Carbenes for the Stabilization of Gold Nanoparticles  
François Ribot (LCPMR - SU)

11h35-11h55 Seeing electrocatalysis at work with time-resolved electrochemical Tip-SERS  
Emmanuel Maisonhaute (LISE - SU)

**12h00-14h30 : buffet, posters et discussions**  
**Niveau Parvis - La sous barre 14/24**

### Après-midi

14h30-15h15 Efficiency and/or biodegradation of inorganic nanoparticles in combined cancer therapy and tissue engineering



**Abstract :** *Nanoparticles-based thermal therapy has emerged to propose alternative treatment and decrease side effects. We recently compared the heating potential of magnetic nanoparticles under magnetic hyperthermia or photothermia, of plasmonic nanoparticles under photothermia, or the combination of both, towards synergistic solutions to complete cancer cell destruction. The therapeutic use of nanoparticles then still raises the more general issue of intracellular nanoparticle long-term fate. We have developed cell spheroids models and magneto-thermal tools to monitor their intracellular integrity. It evidenced a massive intracellular degradation, which could be prevented by a polymeric coating or an inert gold shell. Remarkably, human cells could also biosynthesize their own magnetic nanoparticles, from the intracellular degradation products of synthetic ones. Such cellular biomagnetism could be of particular interest for regenerative medicine applications. Indeed, magnetic nanomaterials also provide cells with sufficient magnetization to manipulate them, as tools for engineering tissues. We also developed magnetic-based methods to manipulate cells, towards the goal to provide magnetic artificial tissue replacements, that can be stimulated on demand, for instance to induce mechanically stem cells differentiation.*

Claire Wilhem (IPCG -physico chimie Curie)

15h15-15h35 The Use of organometallic Chemistry for the Synthesis of chiral Nanocatalysts  
Marc Petit, Caroline Salzemann (IPCM/MONARIS)

15h35-15h55 Silk based Nanocomposites SERS Sensors for Detection of Organic Pollutants  
Erwann Guénin (TIMR - UTC)

15h55-16h15 Low Valent Metals: Organometallic Reactivity  
Fabrice Chemla (IPCM - SU)

16h15-16h35 Physico-chimie des états de spin nucléaire de H<sub>2</sub> à basse température: du laboratoire aux nuages moléculaires interstellaires  
Xavier Michaut (LERMA - SU)

16h35-16h55 High-resolution cryo-EM - two exemples and applications: a Kir channel and an artificial virus-like fiber  
Carlos Fernandes (IMPMC - SU)

16h55-17h00 **Conclusion et mot de la fin**