Journée iSiM 2021

Rencontre inaugurable de l'iSiM

06 juillet 2021 > amphi 25

Campus Pierre et Marie Curie

09h00-09h15	Présentation iSiM : Matthieu Sollogoub
09h15-10h00	Biologie synthétique, fixation du carbone et Biofonderie Sorbonne Université **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

14h30-15h15	Efficiency and/or biodegradation of inorganic nanoparticles in combined cancer therapy and tissue engineering **Claire Wilhem (Institut 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 nucléairede H2 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**

Initiative sciences et ingénierie moléculaires
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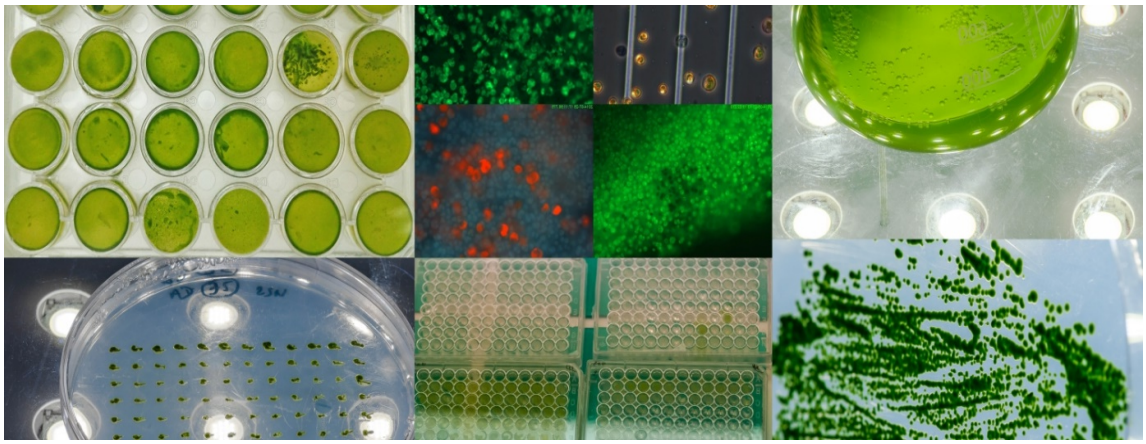
Biologie synthétique, fixation du carbone et Biofonderie Sorbonne Université

Stéphane Lemaire

LCQB - 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



Efficiency and/or biodegradation of inorganic nanoparticles in combined cancer therapy and tissue engineering

Claire Wilhem

Institut Curie

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.