

Séminaire de Chimie Autour des Nanosciences

ANDRE ESTEVEZ-TORRES

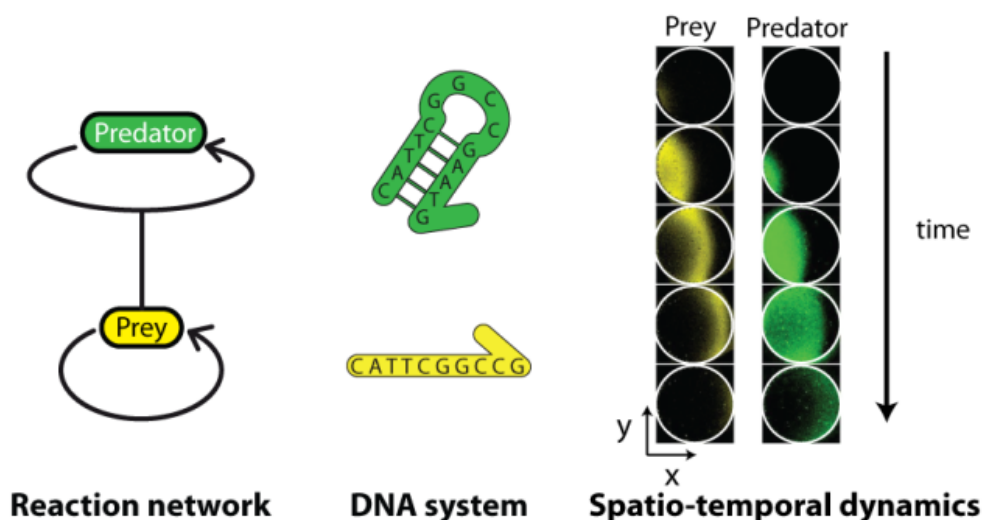
Laboratoire de photonique et de nanostructures, CNRS, Marcoussis

Donnera une conférence sur le thème :

SYNTHESIS OF SPATIO-TEMPORAL STRUCTURES WITH BIOCHEMICAL REACTION NETWORKS

Biological systems combine two levels of molecular complexity. First, they synthesize molecular structures with exquisite chemical properties. Second, they construct out-of-equilibrium chemical reaction networks displaying capabilities that are unexpected for a molecular system: measure time and space, adapt to a changing environment and compute. Chemistry has a longstanding history of synthesizing molecular structures. The question that motivates my research is: can we also synthesize reaction networks with predefined properties?

In an attempt to answer this question I will describe an approach that may be called "synthetic biology outside of cells". First, I will introduce a set of highly reconfigurable synthetic chemical reaction networks based on DNA. It is possible to design a priori their topology, the reaction rates and the diffusion coefficients of the reagents. Second, I will describe different microfluidic reactors that allow a precise control of the initial and boundary conditions of these networks. In particular, I will show the first realization of reaction-diffusion waves in a chemical system engineered from the bottom up.



LE VENDREDI 24 Octobre À 11H00
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