

## **PhD Topic: Photophysics of chromophore-POM Systems for Artificial Photosynthesis**

Host: Institut des Sciences Moléculaires d'Orsay

Contact : [Minh-huong.ha-thi@universite-paris-saclay.fr](mailto:Minh-huong.ha-thi@universite-paris-saclay.fr) and [Thomas.pino@cnrs.fr](mailto:Thomas.pino@cnrs.fr)

Converting solar radiation and abundant small molecules such as water and carbon dioxide into fuels is essential to meet the challenges of the energy transition. This is the goal of artificial photosynthesis. Many challenges remain, and this project will focus on two key aspects: enhancing light harvesting and improving charge management in these systems to increase conversion efficiency.

As part of a PEPR LUMA Moonshot project, photosystems will be developed to operate under heterogeneous conditions, based on chromophore–polyoxometalate (POM) assemblies. Using time-resolved spectroscopy, we will investigate how different architectures influence light capture and the separation of multiple charges. Photoinduced charge accumulation is crucial to activate the catalytic center and remains a major challenge. After systematic studies in solution, charge accumulation will be explored in systems composed of photoelectrodes functionalized with chromophore–POM assemblies.

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### References:

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