

Séminaire - Carolina Gimbert Suriñach

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Titre: "Light induced water splitting: from homogeneous molecular catalysts to devices"

Abstract

Artificial photosynthesis is an attractive way of generating clean fuels from sunlight and water with or without additional carbon dioxide.^{1,2} It is a broad field that will only be successfully implemented in our society with joint efforts of many disciplines, ranging from fundamental inorganic chemistry to material and polymer science, nanotechnology, photonics, engineering, among others.

In this talk, essential principles of water oxidation to dioxygen catalysis (WOC) as well as hydrogen evolution catalysis (HEC) will be discussed with the help of examples developed in our research group.³⁻⁶ Key mechanistic aspects have been used to design the fastest homogeneous WOC catalyst reported to date, which will be described in detail.⁷

Finally, our recent efforts to transfer the high catalytic activity observed in homogeneous phase into solid supports for selected WOC and HEC will be presented. All these results will be put in context of the construction of a light induced water splitting device.⁸⁻¹⁰

(1) *Chem. Soc. Rev.* **2014**, *43*, 7501-7519. (2) *Science* **2016**, *351*, 19201-19209. (3) *Chem. Soc. Rev.* **2017**, *46*, 6088-6098. (4) *Chem. Rev.* **2019**, DOI: 10.1021/acs.chemrev.8b00537. (5) *J. Am. Chem. Soc.* **2016**, *138*, 10586-10596. (6) *J. Am. Chem. Soc.* **2014**, *136*, 7655-7661. (7) *J. Am. Chem. Soc.* **2015**, *137*, 10786-10795. (8) *ACS Catal.* **2016**, *6*, 3310-3316. (9) *J. Am. Chem. Soc.* **2017**, *139*, 12907-12910. (10) *Sust. Energ. & Fuels* **2018**, *2*, 1979-1985.

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