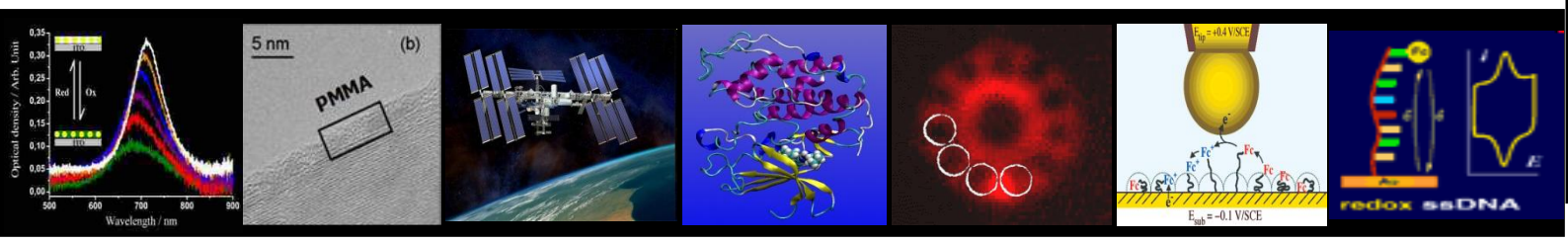
Séminaire Professeur Invité



Prof. Thomas F. Jaramillo

(Associate professor, Stanford University)

Splitting water by electrolysis and solar photoelectrochemistry: Fundamentals and applications

Hydrogen (H2) is one of the most important chemicals used today, with a market demand that exceeds 50 billion kg/year. Most of the H2, however is produced from fossil fuels, particularly natural gas. This seminar will focus on methods to produce H2 by electrochemical and photoelectrochemical (PEC) water-splitting, more sustainable processes for large scale H2 production. First, we will examine techno-economic aspects of producing H2 by means of PEC water-splitting, identifying important research and development needs involving efficiency, cost, and durability. We will then focus on the two key reactions involved, the hydrogen evolution reaction (HER) and the oxygen evolution reaction (OER). We will cover state-of-the-art catalyst materials for these reactions, as recently elucidated through Benchmarking studies. Then, we will describe efforts to develop improved materials for these reactions. Along the way, we will discuss integrating advanced catalyst materials into devices including water electrolyzers as well as semiconductor photoelectrodes.

Mardi 21 Juin, 10h30 – Salle 774 Lavoisier

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