Keynote Speakers

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Short Biography

Gabriel Loget is a CNRS researcher. He received his PhD in Physical Chemistry from the University of Bordeaux (Prof. A. Kuhn - 2012). After that, he performed a postdoctoral stay at the University of California, Irvine in the group of Prof. Robert M. Corn. In 2014, he was awarded an Alexander-von-Humboldt postdoctoral fellowship for doing his research at the Friedrich-Alexander Universität of Erlangen-Nürnberg in the group of Prof. Patrik Schmuki. In 2015, he joined the CNRS as a researcher at the Institut des Sciences Chimiques de Rennes (2015-2023) and, then, at the Institut des Sciences Moléculaires (NSysA group, from 2024). He has received several awards including the DCP “Innovation Prize” of the SCF. His research interests are electrochemistry and material sciences for energy conversion.

Title of Oral Presentation

Nanostructured photoelectrodes for solar H2 production

Keywords (5 words max)

Photoelectrocatalysis, Hydrogen, Urea, Photochemistry, Sun

Abstract of Oral Presentation

Although the integration of solar and wind energies in electrical grids is considerably growing worldwide, a major concern in employing these energy sources to a much larger extent is their intermittency and their diffuse geographic distribution. A solution to solve these two issues is the conversion of renewables into a carbon-free energy carrier that would allow the storage of energy and its distribution on-site and on-demand. Hydrogen (H2) has long been considered a highly promising energy carrier to fulfill this challenge. In this view, solar and wind energies can be converted into H2, which would ensure: energy storage as well as distribution and conversion in fuel cells, devices that readily convert H2 into electricity with water being the only by-product.[1] To this goal, H2 needs to be generated by the conversion of renewable energies through a zero-emission process. This is possible by coupling water electrolysis to a renewable source of energy to yield a completely clean and scalable process that generates highly pure H2 only from water.

In this contribution, I will describe the recent progress of our group[2] in the preparation and study of photoanodes for the oxygen evolution reaction (OER) and the urea oxidation reaction (UOR), which are two counter reactions that can be used to obtain electrons for H2 production. This will include approaches based on nanoelectrodeposition[3], electrodissolution[4] and hydrothermal synthesis.[5] I will also discuss the coupling of efficient nanostructured oxidation catalysts with tandem solar cells.

Acknowledgement

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References (6 lines max)

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