



Photo-Induced Hydrogen Formation from Food Waste

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The production of clean energy is one of the most actual issues of our society. Among the different envisaged clean energy sources, hydrogen is an extremely relevant and non-polluting source. Indeed, the latter possess a much more energy efficiency than fuel and produce only water as by-product for its reaction with oxygen of air. Unfortunately, the hydrogen is actually produced from fossil-based sources which limit significantly its impact as clean energy source. Several approaches are being developed in order to produce hydrogen from widely available sources such as water (*water splitting*) or biomass (*carbonization and pyrolysis of the biomass*).¹ The manufacture of hydrogen from food waste is a particularly interesting approach since it will allow the production of this energy from local and really available sources in particular using light as driving force.

The proposed post-doctoral position aims to synthesize and develop several original mono and bi-metallic photo-redox catalysts in order to catalyze dehydrogenating reactions of diverse chemical products (*fatty acids*,² *alcohols*,³ *lactic acid*, etc...) produced by food waste fermentation.



Duration: 1 year contract with the possibility of renewal for a maximum of 3 years

Funders: Agence Innovation Défense

Laboratory: [LCM](#), [Ecole Polytechnique](#)

Salary: according to Ecole Polytechnique salary grids (based on number of years of experience)

The candidate should possess a Ph.D. in chemistry and a strong background in organic and/or inorganic synthesis. Knowledge in photo-redox catalysis and/or transition metal catalysis would be a high asset but are not mandatory.

¹ Bessarabov, D.; Wang, H.; Li, H.; Zhao, N. PEM electrolysis for hydrogen production, **2016**, CRC Press.

² Sun, X.; Chen, J.; Ritter, T. *Nature Chem.*, **2018**, *10*, 1229.

³ Trincado, M.; Banerjee, D.; Grützmacher, H. *Energ Environ. Sci.*, **2014**, *7*, 2464.