

12-months Post-Doctoral Position

« Selective oxidation processes by photocatalytic activation »

Amongst the various industrial oxidation reactions, photocatalytic processes constitute eco-responsible methods to functionalize organic compounds into valuable chemical building blocks through a less energy consuming transformation compared to thermal activation and without the use of stoichiometric organic oxidants producing large amounts of wastes. In such reactions, selectivity should be controlled to avoid total oxidation of the compounds.

The OMC Team located at ENSCR has already obtained promising results in the selective liquid phase photocatalytic oxidation of benzyl alcohol into benzaldehyde under an oxygen atmosphere by a semiconductor material possessing light absorption properties. After optimization of the reaction conditions, the results were extended to other substrates, such as alcohols and olefins, demonstrating in some cases the possible photocatalytic oxidative cleavage which constitutes another promising research area.

During this post-doc position, the selective photocatalytic oxidation, as well as the oxidative cleavage of more industrially challenging substrates, will be investigated under oxygen or air atmosphere. Novel photocatalysts will be designed and characterized according to the nature of the metallic species and the supports (zeolites, titanium dioxide, etc.). They will be investigated in the targeted transformations owing to their potential in oxidation reactions and their relevance in terms of disponibility and security, with a particular attention to the selectivity obtained.

Key-words: Catalysis, PhotoOxidation, (Nano)materials, Sustainable chemistry

Requirements and responsibilities: The prospective candidate should have been awarded a Ph.D. in catalysis, and potentially a post-doctoral training. He (She) should have expertise in organic chemistry and a pronounced interest for catalysis and material chemistry, as well as competences in usual analytical techniques. Moreover, the candidate will also be expected to collaborate with a Ph.D student and develop new scientific techniques and experimental protocols. He or she will be curious, really motivated, enthusiastic, autonomous and should have some good written/oral communication skills.

« Organometallics : Materials and Catalysis » Team – « Nanocatalysis » Group

Ecole Nationale Supérieure de Chimie de Rennes

<https://www.ensc-rennes.fr/recherche/equipe-omc/>

Duration: 12 months. Starting as soon as a suitable candidate is found.

Detailed CV, Supporting statement and referee's letters to be sent to :

Dr Audrey Denicourt-Nowicki – Audrey.Denicourt@ensc-rennes.fr, 02 23 23 80 67

Pr Alain Roucoux – Alain.Roucoux@ensc-rennes.fr, 02 23 23 80 37