

POSTDOCTORAL Candidate (m/f/d)*with a solid background in****Synthetic Organometallic Chemistry and Catalysis***

Employer:	Université de Lorraine, Nancy, France
Contract Type:	Postdoctoral Researcher, 12 months
Place of Work:	Laboratoire Lorrain de Chimie Moléculaire (L2CM), UMR 7053, Nancy, France
Start Date:	March 2025 - Review of applications will begin immediately and continue until the position is filled.

Adaptive Photocatalytic Systems: Impact of Electronic Structure on Sustainable Biohybrid Production from CO₂ and Bio-based Olefins**Project Description**

Recent developments in photocatalysis have introduced new approaches to harnessing sustainable energy and carrying out synthetic transformations that traditional thermal methods often find challenging. One key challenge is the catalytic conversion of alkenes into polar functional groups, such as carboxylic acids and amines, which are important in green chemistry. While progress has been made, some relatively simple transformations remain difficult to achieve using current methodologies. This project focuses on a novel approach to address these challenges by synthesizing biohybrid products—such as carboxylic acids—directly from CO₂-derived formate salts and bio-based olefins. This method leverages thermodynamic advantages while maintaining efficiency in terms of atom and electron economy. The selected candidate will work on the development of transition-metal-based catalytic systems that use light to enable alternative reaction pathways for the conversion of alkenes into polar functional groups. A central aspect of the project involves the controlled transfer of atoms or functional groups from donors to acceptors, enabling the production of new compounds with tailored properties. The project integrates computational and experimental approaches. Computational studies, in collaboration with Dr. Mariachiara Pastore (LPCT-Nancy), will employ Density Functional Theory (DFT) to explore the molecular mechanisms of these catalytic transformations. These insights will help to identify and optimize reaction pathways.

Qualifications:

- **Educational Background:** Ph.D. in Synthetic Molecular Chemistry or a related field.
- **Technical Skills:**
 - Strong foundation in organometallic chemistry with an emphasis on synthesis.
 - Proven scientific track record with first-author publications in reputable journals.
 - Experience in the multistep synthesis of organic ligand frameworks.
 - Proficiency in handling air-sensitive and thermally labile organometallic compounds.
 - Expertise in standard structural characterization techniques (NMR, X-ray diffractometry, mass spectrometry).
 - Familiarity with IR, UV-vis spectroscopy, GC, GC-MS, and photochemistry is advantageous.
- **Language Proficiency:** Excellent command of English (verbal and written).
- **Personal Attributes:** Self-motivated, independent, target-oriented, systematic working style, creative, and excellent collaborative and interpersonal skills.

Please send your application documents as a single PDF, including a cover letter, curriculum vitae, copies of degree certificates, and contact information for two references. Use the reference code “CW01” and submit your application by **February 15, 2024**, via email to: Pr. Christophe Werlé, (christophe.werle@univ-lorraine.fr) and Pr. Ibrahim Abdellah (ibrahim.abdellah@univ-lorraine.fr).