

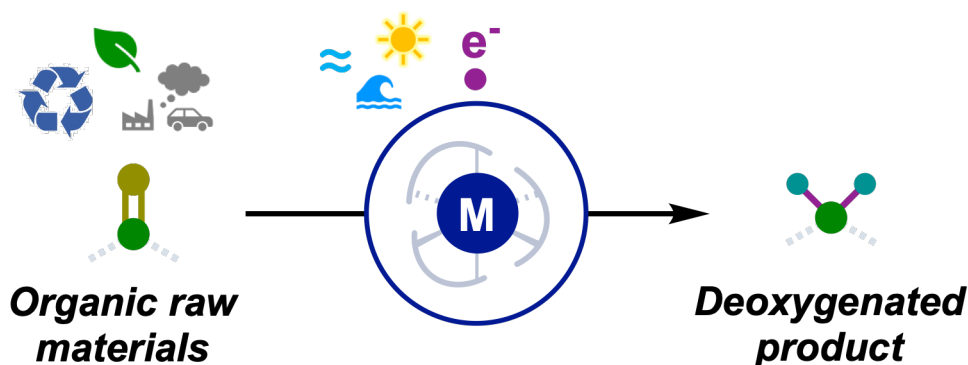
Electrifying Organics Valorization: Reductive Defunctionalization and Transfer by Molecular Electrocatalysis

Keywords: Molecular electrochemistry, organometallic catalysis, electrosynthesis, reduction reactions.

To limit the use of fossil-based energy and material resources in chemical production, the electrification of synthesis pathways is a promising way forward. This development brings electrosynthesis - crafting chemical bonds using electricity - as a key technology. The reach of this progress yet depends on the development of efficient catalysts suited to electrosynthetic conditions – *electrocatalysts*. In this context, our team is fostering original approaches to deploy electrocatalysis in synthesis.

In this project, we aim at exploring further electroreductive **metallacyclic strategies** for **hydrodefunctionalizations** of organic building blocks. The aim is to **upgrade organic raw materials or wastes** through the removal of undesired functionalities. Especially, the project will focus on **hydrogenative deoxygenation** of organic unsaturations. The approach builds on the rational design of **transition metal complexes as electrocatalysts**, capitalizing on previous experience of the team. This highly interdisciplinary project involves molecular synthesis and characterizations, electrochemical/-catalytic studies, mechanistic investigations and electrosynthesis.

Key references N. Kaeffer, W. Leitner, *JACS Au* **2022**, 2, 1266.
G. Durin, M. Y. Lee, M. A. Pogany, T. Weyhermuller, N. Kaeffer, W. Leitner, *J. Am. Chem. Soc.* **2023**, 145, 17103.
G. Durin, M. Lee, M. A. Pogany, C. Kahl, T. Weyhermuller, W. Leitner, N. Kaeffer, *Chem. Commun.* **2025**, 61, 520.



Candidate's profile

- In MSc chemistry track (or equivalent).
- Excellent knowledge and skills in molecular chemistry (organic, organometallic).
- Interest or experience in electrochemistry.
- Scientific rigor in practice, analysis and reporting.

Skills and knowledge developed

- **Molecular synthesis** (organic, coordination complexes) and identification methods (NMR, GC, MS).
- **Electrochemistry** of molecular compounds (voltammetry, electrolysis, spectroelectrochemistry).
- Reactivity of **organometallic** compounds.
- Formatting and presentation of scientific results in team seminars and project report.

Location: **Strasbourg, France** (Cronenbourg Campus)

Supervision: Dr. Nicolas Kaeffer

Contact: nkaeffer@unistra.fr

Host: Team MeCSE ([Molecular ElectroCatalysis for Synthesis and Energy](#)) within LIMA - UMR 7042

Application:

- ➔ Mail @ nkaeffer@unistra.fr with CV, cover letter, BSc-MSc transcripts and contacts of 2 references (previous supervisors/teachers).
- ➔ Deadline: **30/10/26**.