



## Post-doctoral researcher position in Chemistry Grenoble, France

**Title :** “CLicked “ bioinspired COpper Complexes at carbon Nanotube hybrid electrodes for Oxygen Reduction (**COCLICO**)

**Institution:** Univ. Grenoble Alpes/Department of Molecular Chemistry ([DCM](#))

The project will be developed within two groups (BIOCEN and CIRE) in DCM possessing complementary recognized expertise in chemical design and synthesis, characterization techniques such as coordination chemistry, molecular electrochemistry and functionalization of carbon-based nanomaterials. The fellow is available for 18 months.

**Context:** The primary objective of this project is to develop novel bioinspired nanohybrid catalysts based on synthetic copper complexes. These catalysts aim to be integrated into a bioinspired Pt-free proton-exchange membrane fuel cells (PEMFC). **At present, there is no copper complex that can rival platinum or multicopper enzymes like laccase in the oxygen reduction or water oxidation processes.**

**Job description:** The objective of the project is the development of novel bio-inspired copper catalysts for ORR able to compete with Pt and enzymes in terms of overpotential. These complexes will be immobilized at carbon nanotubes by taking advantage of clickable multivalent scaffolds (peptidic or dendrimeric scaffolds) and advanced characterizations will be required. Finally, these novel nanohybrid catalysts will be implemented in a fully bioinspired Pt-free H<sub>2</sub>/air fuel cell.

Thus, the candidate should have a PhD degree in organic/inorganic chemistry, with experiences on nanomaterials functionalization and electrochemistry, willing to work in a multidisciplinary cooperative environment. Additional knowledge in catalysis would be appreciated.

**Application:** Candidates should send a CV, a cover letter, recommendation letters and grade transcripts by email to Alan Le Goff ([alan.le-goff@univ-grenoble-alpes.fr](mailto:alan.le-goff@univ-grenoble-alpes.fr)) and Catherine Belle ([catherine.belle@univ-grenoble-alpes.fr](mailto:catherine.belle@univ-grenoble-alpes.fr)). Deadline: October 30<sup>th</sup>, 2024.

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### References in the field

- (1) Gentil, S.; Molloy, J. K.; Carrière, M.; Hobballah, A.; Dutta, A.; Cosnier, S.; Shaw, W. J.; Gellon, G.; Belle, C.; Artero, V.; Thomas, F.; Le Goff, A. A Nanotube-Supported Dicopper Complex Enhances Pt-Free Molecular H<sub>2</sub>/Air Fuel Cells. *Joule* **2019**, *3* (8), 2020–2029. <https://doi.org/10.1016/j.joule.2019.07.001>.
- (2) Gentil, S.; Pifferi, C.; Rousselot-Pailley, P.; Tron, T.; Renaudet, O.; Le Goff, A. Clicked Bifunctional Dendrimeric and Cyclopeptidic Addressable Redox Scaffolds for the Functionalization of Carbon Nanotubes with Redox Molecules and Enzymes. *Langmuir* **2021**, *37* (3), 1001–1011. <https://doi.org/10.1021/acs.langmuir.0c02095>.
- (3) Brazzolotto, D.; Nédellec, Y.; Philouze, C.; Holzinger, M.; Thomas, F.; Le Goff, A. Functionalizing Carbon Nanotubes with Bis(2,9-Dialkyl-1,10-Phenanthroline)Copper(II) Complexes for the Oxygen Reduction Reaction. *Inorg. Chem.* **2022**, *61* (38), 14997–15006. <https://doi.org/10.1021/acs.inorgchem.2c01791>.