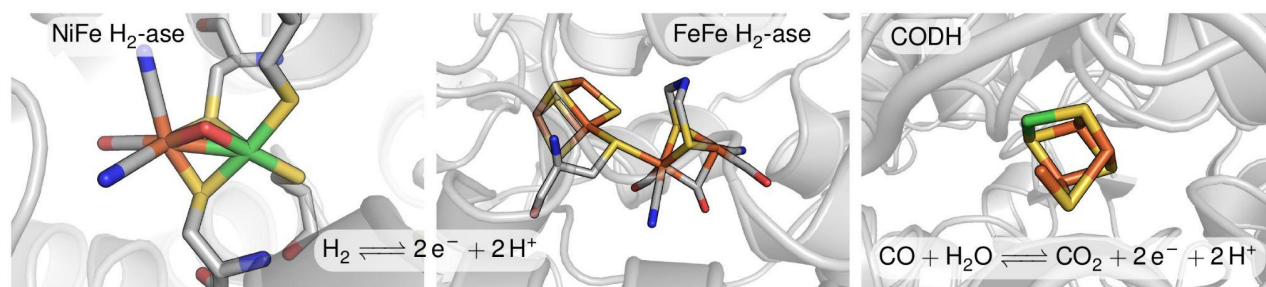


Post-doctoral positions to study redox metalloenzymes that use or produce solar-fuels

The group «*Reaction dynamics of multicenter redox enzymes, electrochemical kinetics*» (<https://bip.cnrs.fr/groups/bip06/>) is looking for post-doctoral researchers to study different aspects of the mechanism of redox gas-processing metalloenzymes, namely the CO dehydrogenases, which catalyze the reversible reduction of CO₂ to CO at a unique NiFe active site, and hydrogenases, which catalyze the reversible oxidation of H₂ (to protons and electrons), at either a FeFe or NiFe active site (figure). These enzymes are very fast and, for most of them, extremely energy efficient, requiring hardly any additional driving force to catalyze the reaction at high rates.



The technique mostly used in the team is Protein Film Electrochemistry, a kinetic technique in which the redox enzyme is immobilized on the electrode in a configuration which allows direct electron transfer. This configuration allows arbitrary changes in the driving force, and measuring the current makes it possible to follow the activity with great accuracy and a high time resolution. The team has built a reputation on pushing the quantitative analysis of the acquired data as far as possible.

The questions will focus on various aspects of the reactivity of the enzymes, such as the transport of substrate/product to/from the active site, the role of the electron transfer chain in tuning the catalysis, proton transfers, and fine details in the second coordination sphere that tune the catalytic properties of the enzymes. For all of the enzymes studied, the team can work on many different isoforms, most of which can be modified by site-directed mutagenesis possible, which makes it possible to lead an extensive study of structure-function relationship.

Candidates

The candidates should hold a PhD in chemistry or biology, have an interest in bioinorganic chemistry and kinetics, and an open mind. Any previous work on redox enzymes (in particular those studied in this project) or electrochemistry is a plus, but not a requirement.

Funding

The group has acquired funding from different sources, concerning several positions for at least 18 months.

To apply, please send a CV and motivation letter to vincent.fourmond@imm.cnrs.fr