

# UniCat Colloquium

## PROF. VINCENT FOURMOND

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*When metalloenzymes stop working: using inactivation processes to learn about the catalytic cycle of FeFe hydrogenase*

FeFe hydrogenases are metalloenzymes that catalyze the reversible oxidation of H<sub>2</sub> into protons and electrons at a dinuclear FeFe active site. Their astounding catalytic capacities have attracted considerable interest over the past decade, since it is believed that drawing inspiration from them could help design noble-metal-free successors for platinum in fuel cells. We study these enzymes using protein film voltammetry, a technique that makes it possible to follow the changes in activity of the enzyme with precise control of its redox state. Using this technique, we have shown that FeFe hydrogenase lose their activity at high driving force (at very low or very high potentials) or in the presence of inhibitors such as CO. We have characterized these processes in detail. Combined with theoretical chemistry approaches (DFT, molecular dynamics), this has brought a surprising amount of information about the chemistry of the active site, such as the evidence of so far unsuspected flexibility, the adverse effects of CO binding to reduced states, and the existence of alternative catalytic cycles.

**Wednesday, November 12, 2014 at 5:15 PM**

TU Berlin, Institute of Chemistry  
Straße des 17. Juni 115, 10623 Berlin

Building C, Lecture Hall **C 264**

**Prof. Wollenberger (UP)**

Organizer

Coffee and cake will be served 30 minutes before the lecture. Guests are cordially invited to attend!  
Prof. Dr. Matthias Driess - Chair of the Cluster of Excellence UniCat - [www.unicat.tu-berlin.de](http://www.unicat.tu-berlin.de)



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