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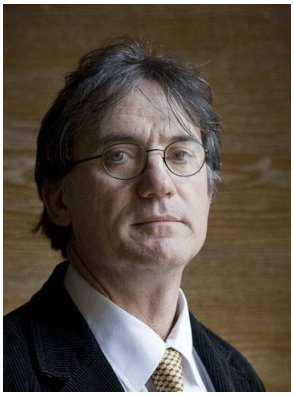

RESEARCH INTERESTS

- Catalysis and biocatalysis
- Bioinspired chemistry
- Protein chemistry
- Bioinorganic chemistry
- Coordination chemistry

SUMMARY

Marc Fontecave is Professor at the Collège de France in Paris and member of the Academy of Sciences. His research activity is aimed at understanding the molecular structure and the chemical reactivity of complex redox biological systems containing metal ions, in particular iron. The strategy is to tackle these questions through a multidisciplinary approach based on the concepts and methods of protein chemistry, enzymology, molecular and structural biology, in one hand, and synthetic organic and inorganic chemistry, in the other hand, as well as on the utilization of a variety of spectroscopic tools. The biological systems under investigation illustrate various facets of bioinorganic chemistry and biocatalysis. They are selected for their physiological importance, for the novelty of the chemistry they carry out and also for their potential applications in health, energy and environmental sciences. The bioinspired chemical systems are used to understand key biological reactions and to discover new catalysts useful for synthetic reactions. As examples of research projects: (i) characterization of iron-sulfur enzymes involved in the modification of biological macromolecules with special emphasis on tRNA modification and DNA repair; (ii) characterization of the protein machineries involved in the complex process of iron-sulfur biosynthesis; (iii) preparation and evaluation of novel bioinspired (photo)catalysts based on non noble metals for hydrogen production and oxidation as well as for carbon dioxide reduction and their development in fuel cells and (photo)electrolyzers.

PUBLICATIONS

Selected publications

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- Iron-Sulfur biosynthesis: mechanisms of cluster assembly and transfer. **M. Fontecave**, S. Ollagnier-de-Choudens. ***Arch. Biochem. Biophys*.** 2008, 474, 226-237
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- From Hydrogenase Mimics to Noble-Metal Free Hydrogen-Evolving Electrocatalytic Nanomaterials. A. Le Goff, V. Artero, B. Jousselme, N. Guillet, R. Métayé, A. Fihri, S. Palacin, **M. Fontecave. *Science*** 2009, 326, 1384-1387
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- Noncovalent Modification of Carbon Nanotubes with Pyrene-functionalized Ni complexes: Carbon Monoxide Tolerant Catalysts for H2 Evolution and Uptake. P. D. Tran, A. Le Goff, J. Heidkamp, B. Jousselme, N. Guillet, S. Palacin, H. Dau, **M. Fontecave**, V. Artero. ***Angew. Chem.*** 2011, 50, 1371 –1374