

2020

Solar-Driven Electrochemical CO₂ Reduction with Heterogeneous Catalysts

C. E. Creissen, M. Fontecave

Adv. En. Mater. 2020, in press, doi: 10.1002/aenm.202002652

Imidazolium and Pyrrolidinium Based Ionic Liquids as Co-catalysts for CO₂ Electroreduction in Model Molecular Electrocatalysis

E. Vichou, Y. Li, M. Gomez-Mingot, M. Fontecave, C.M. Sanchez-Sanchez

The Journal of Physical Chemistry C, 2020, in press.

Immobilization of a molecular Re complex on MOF-derived hierarchical porous carbon for CO₂ electroreduction in water/ionic liquid electrolyte.

D. Grammatico, H. N. Tran, Y. Li, B.-L. Su, M. Fontecave

ChemSusChem 2020, doi: 10.1002/cssc.202002014

A Single Molecular Stoichiometric P-Source for Phase-Selective Synthesis of Crystalline and Amorphous Iron Phosphide Nanocatalysts

F. D'Accriscio, E. Schrader, C. Sassoeye, M. Selmane, R.F. André, S. Lamaison, D. Wakerley, M. Fontecave, V. Mougél, G. Le Corre, H. Grützmacher, C. Sanchez, S. Carencó

ChemNanoMat 2020, 6, 1208 –1219, doi :10.1002/cnma.202000198

Co-immobilization of a Rh Catalyst and a Keggin Polyoxometalate in the UiO-67 Zr-Based Metal-Organic Framework: In Depth Structural Characterization and Photocatalytic Properties for CO₂ Reduction.

Benseghir Y, Lemarchand A, Duguet M, Mialane P, Gomez-Mingot M, Roch-Marchal C, Pino T, Ha-Thi MH, Haouas M, Fontecave M, Dolbecq A, Sassoeye C, Mellot-Draznieks C.

J Am Chem Soc. 2020, 142, 9428-9438. doi: 10.1021/jacs.0c02425.

The O₂-independent pathway of ubiquinone biosynthesis is essential for denitrification in *Pseudomonas aeruginosa*.

Vo CD, Michaud J, Elsen S, Faivre B, Bouveret E, Barras F, Fontecave M, Pierrel F, Lombard M, Pelosi L.

J Biol Chem. 2020, 295, 9021-9032. doi: 10.1074/jbc.RA120.013748.

Mechanistic Understanding of CO₂ Reduction Reaction (CO₂RR) Towards Multicarbon Products by Heterogeneous Copper-Based Catalysts

T. K. Todorova, M. Schreiber, M. Fontecave

ACS Catalysis 2020, 10, 1754-1768, doi : 10.1021/acscatal.9b04746

Electroreduction of CO₂ to Formate with Low Overpotential using Cobalt Pyridine Thiolate Complexes.

Dey S, Todorova TK, Fontecave M, Mougél V.

Angew Chem Int Ed Engl. 2020. doi: 10.1002/anie.202006269.

Structure-directing role of immobilized polyoxometalates in the synthesis of porphyrinic Zr-based metal-organic frameworks.

Duguet M, Lemarchand A, Benseghir Y, Mialane P, Gomez-Mingot M, Roch-Marchal C, Haouas M, Fontecave M, Mellot-Draznieks C, Sassoie C, Dolbecq A. *Chem Commun (Camb)*. 2020, 56, 10143-10146. doi: 10.1039/d0cc04283h.

Structural, biochemical and functional analyses of tRNA-monoxygenase enzyme MiaE from *Pseudomonas putida* provide insights into tRNA/MiaE interaction. Carpentier P, Leprêtre C, Basset C, Douki T, Torelli S, Duarte V, Hamdane D, Fontecave M, Atta M. *Nucleic Acids Res.* 2020. doi: 10.1093/nar/gkaa667.

A bioinspired molybdenum-copper molecular catalyst for CO₂ electroreduction. Mouchfiq A, Todorova TK, Dey S, Fontecave M, Mougél V. *Chem Sci*. 2020 May 18;11(21):5503-5510. doi: 10.1039/d0sc01045f.

A heterogeneous recyclable Rhodium-based catalyst for the reduction of pyridine dinucleotides and flavins
Y. Deng, M. Odziomek, C. Sanchez, O. Back, V. Mougél, M. Fontecave
ChemCatChem 2020, 12, 1236-1243, doi: 10.1002/cctc.201901726

Carbon Nanotube supported Copper Polyphthalocyanine for Efficient and Selective Electrocatalytic CO₂ Reduction to CO
D. Karapinar, A. Zitolo, Ngoc Tran Huan, S. Zanna, D. Taverna, L.H.G. Tizei, D. Giaume, P. Marcus, V. Mougél, M. Fontecave
ChemSusChem 2020, 13, 173-179, doi : 10.1002/cssc.201902859

High Current Density CO₂-to-CO Electroreduction on Ag-Alloyed Zn dendrites at Elevated Pressure
S. Lamaison, D.Wakerley, J. Blanchard, D. Montero, G. Rouse, D. Mercier, P.Marcus, D.Taverna, D. Giaume, V. Mougél, M. Fontecave
Joule 2020, 4, 395-406, doi : 10.1016/j.joule.2019.11.014

Structure and functional characterization of 4-hydroxyphenylacetate 3-hydroxylase from *Escherichia coli*
Y. Deng, B. Faivre, O. Back, M. Lombard, L. Pecqueur, M. Fontecave
ChemBioChem, 2020, 21, 163-170. doi: 10.1002/cbic.201900277.

Structural evidence for a [4Fe-5S] intermediate in the non-redox desulfuration of thiouracil.
Zhou J, Pecqueur L, Aučynaitė A, Fuchs J, Rutkienė R, Vaitekūnas J, Meškys R, Boll M, Fontecave M, Urbonavičius J, Golinelli-Pimpaneau B.
Angew Chem Int Ed Engl. 2020. doi: 10.1002/anie.202011211.

Molecular porous photosystems tailored for long-term photocatalytic CO₂ Reduction. F. M. Wisser, M. Duguet, Q. Perrinet, A. C. Ghosh, M. Alves-Favaro, Y. Mohr, C. Lorentz, E. A. Quadrelli, R. Palkovits, D. Farrusseng, C. Mellot-Draznieks, V. De Waele, J. M. Canivet
Angew. Chem. Int. Ed., 2020, 59, 5116-5122. doi: 10.1002/anie.201912883.

Reductive Evolution and Diversification of C5-Uracil Methylation in the Nucleic Acids of Mollicutes.

Sirand-Pugnet P, Brégeon D, Béven L, Goyenvalle C, Blanchard A, Rose S, Grosjean H, Douthwaite S, Hamdane D, Crécy-Lagard V. *Biomolecules*. 2020, 10, 587. doi: 10.3390/biom10040587.

Structure-based mechanistic insights into catalysis by tRNA thiolation enzymes. Bimai O, Arragain S, Golinelli-Pimpaneau B. *Curr Opin Struct Biol*. 2020, 65, 69-78. doi: 10.1016/j.sbi.2020.06.002.

2019

Nickel complexes based on molybdopterin-like dithiolenes: catalysts for CO₂ electroreduction

T. Fogeron, P. Retailleau, M. Gomez-Mingot, Y. Li, M. Fontecave
Organometallics 2019, 38, 1344-1350

A soluble metabolon synthesizes the isoprenoid lipid Ubiquinone

M. Hajj Chehade, L. Pelosi, C. D. Fyfe, L. Loiseau, B. Rascalou, S. Brugière, K. Kazemzadeh, Chau-Duy-Tam Vo, L. Aussel, Y. Couté, M. Fontecave, F. Barras, M. Lombard, F. Pierrel
Cell Chem. Biol. 2019, 12, 511-517, doi: 10.1016/j.chembiol.2018.12.001

Zn-Cu alloy nanofoams as efficient catalysts for CO₂ reduction to syngas mixtures with potential-independent H₂:CO ratio

S. Lamaison, D. Wakerley, D. Montero, G. Rouse, D. Taverna, D. Giaume, Tran HN, M. Fontecave, V. Mougél
ChemSusChem 2019, 12, 511-517, doi: 10.1002/cssc.201802287.

Controlling Hydrogen Evolution during CO₂ Photoreduction to Formic Acid using [Rh(bpy)(Cp*)Cl]⁺ Catalysts: A Structure-Activity Study

T. K. Todorova, Tran Ngoc Huan, X. Wang, H. Agarwala, M. Fontecave
Inorg. Chem. 2019, 58, 6893-6903

Shigella IpaA binding to talin stimulates filopodial capture and cell adhesion

C. Valencia-Gallardo, C. Bou-Nader, D.I. Aguilar-Salvador, N. Carayol, N. Quenech'Du, L. Pecqueur, H. Park, M. Fontecave, T. Izard, G. Tran Van Nhieu
Cell Reports 2019, 26, 921-932, doi: 10.1016/j.celrep.2018.12.091

Molecular basis for transfer RNA recognition by the double-stranded RNA-binding domain of human dihydrouridine synthase 2

C. Bou-Nader, P. Barraud, L. Pecqueur, J. Pérez, C. Velours, M. Fontecave, C. Tisné and D. Hamdane
Nucl. Acid Res. 2019, 47, 3117-3126, doi: 10.1093/nar/gky1302

Low-cost high efficiency system for solar-driven conversion of CO₂ to hydrocarbons

Huan Ngoc Tran, D. Alves Dalla Corte, S. Lamaison, L. Lutz, N. Menguy, M. Foldyna, S.-H. Turren-Cruz, A. Hagfeldt, F. Bella, M. Fontecave, V. Mougél.
Proc. Natl. Acad. Sci. 2019, 116, 9735-9740, doi: 10.1073/pnas.1815412116

Electroreduction of CO₂ on Single-Site Copper-Nitrogen-Doped Carbon Material: Selective Formation of Ethanol and Reversible Restructuration of the Metal Sites
D. Karapinar, Ngoc Tran Huan, N. Ranjbar Sahraie, D. W. Wakerley, N. Touati, S. Zanna, D. Taverna, L.H. Galvão Tizei, A. Zitolo, F. Jaouen, V. Mougél, M. Fontecave
Angew. Chem. 2019, 58, 15098-15103, doi: 10.1002/anie.201907994.

Physiologically relevant reconstitution of iron-sulfur cluster biosynthesis uncovers persulfide-processing functions of ferredoxin-2 and frataxin.

S. Gervason, D. Larkem, A. Ben Mansour, T. Botzanowski, C.S. Müller, L. Pecqueur, A. Delaunay-Moisan, G. Le Pavéc, O. Brun, J. Agramunt, A. Grandas, M. Fontecave, V. Schüneman, S. Cianférani, C. Sizun, M. Toledano, B. D'Autréaux.
Nature Communications 2019, 10:3566. doi: 10.1038/s41467-019-11470-9.

Bio-inspired hydrophobicity promotes CO₂ reduction on a Cu surface

D. Wakerley, S. Lamaison, F. Ozanam, N. Menguy, D. Mercier, P. Marcus, M. Fontecave, V. Mougél
Nature Materials 2019, Nov;18(11):1222-1227. doi: 10.1038/s41563-019-0445-x.

Conformational stability adaptation of a double-stranded RNA binding domain to transfer RNA ligand.

C. Bou-Nader, L. Pecqueur, P. Barraud, M. Fontecave, C. Tisé, S. Sacquin-Mora, D. Hamdane
Biochemistry 2019, 58, 2463-2473, doi: 10.1021/acs.biochem.9b00111.

A bioinspired artificial [FeFe]-hydrogenase with a synthetic H-cluster

C. Papini, C. Sommer, L. Pecqueur, D. Pramanik, S. Roy, E. J. Reijerse, F. Wittkamp, U-P. Apfel, V. Artero, W. Lubitz, M. Fontecave
ACS Catal. 2019, 9, 4495-4501, doi : 10.1021/acscatal.9b00540

Ubiquinone biosynthesis over the entire O₂ range: characterization of a conserved O₂-independent pathway

L. Pelosi, C.-D.-T. Vo, S. Abby, L. Loiseau, B. Rascalou, M. Hajj Chehade, B. Faivre, M. Gousse, C. Chenal, N. Touati, Laurent Binet, David Cornu, C. D. Fyfe, M. Fontecave, F. Barras, M. Lombard, F. Pierrel
mBio 2019, 10, pii: e01319-19. doi: 10.1128/mBio.01319-19

An unprecedented {Ni₁₄SiW₉} hybrid polyoxometalate with high photocatalytic hydrogen evolution activity

G. Paille, A. Boulmier, A. Bensaid, Minh-Huong Ha-Thi, Thu-Trang Tran, T. Pino, J. Marrot, E. Rivière, C. H. Hendon, O. Oms, M. Gomez-Mingot, M. Fontecave, C. Mellot-Draznieks, A. Dolbecq, P. Mialane
Chem. Commun. 2019, 55, 4166-4169. doi: 10.1039/c9cc01269a.

FeNC Catalysts for CO₂ Electroreduction to CO: Effect of Nanostructured Carbon Supports

D. Karapinar, Ngoc Tran Huan, D. Giaume, N. Ranjbar, F. Jaouen, V. Mougél, M. Fontecave.
Sust. En. & Fuels 2019, 33, 1833-1840, doi : 10.1039/c9se00214f

Copper substituted NiTiO₃ Ilmenite type Materials for Oxygen Evolution Reaction
A. Guet, Tran Ngoc Huan, C. Payen, F. Porcher, V. Mougel, M. Fontecave, G. Corbel
ACS Appl. Mat. Int. 2019, 11, 31038-31048, doi: 10.1021/acsami.9b08535.

Ultrafast photoinduced flavin dynamics in the unusual active site of the tRNA methyltransferase TrmFO

Dozova N, Lacomat F, Bou-Nader C, Hamdane D, Plaza P.

Phys Chem Chem Phys. 2019, 21, 8743-8756. doi: 10.1039/c8cp06072j.

A Soluble Metabolon Synthesizes the Isoprenoid Lipid Ubiquinone.

Hajj Chehade M, Pelosi L, Fyfe CD, Loiseau L, Rascalou B, Brugière S, Kazemzadeh K, Vo CD, Ciccone L, Aussel L, Couté Y, Fontecave M, Barras F, Lombard M, Pierrel F.

Cell Chem Biol. 2019, 26, 482-492.e7. doi:10.1016/j.chembiol.2018.12.001

Physiologically relevant reconstitution of iron-sulfur cluster biosynthesis uncovers persulfide-processing functions of ferredoxin-2 and frataxin.

Gervason S, Larkem D, Mansour AB, Botzanowski T, Müller CS, Pecqueur L, Le Pavec G, Delaunay-Moisan A, Brun O, Agramunt J, Grandas A, Fontecave M, Schünemann V, Cianférani S, Sizun C, Tolédano MB, D'Autréaux B.

Nat Commun. 2019, 10, 3566. doi: 10.1038/s41467-019-11470-9.

Thin Films of Fully Noble Metal-Free POM@MOF for Electrocatalytic and Photocatalytic Water Oxidation

G. Paille, M. Gomez-Mingot, C. Roch-Marchal, M. Haouas, T. Pino, M.-H. Ha-Thi, G. Landrot, P. Mialane, M. Fontecave, A. Dolbecq, C. Mellot-Draznieks

ACS Appl. Mat. Int. 2019, 11, 47837-47845, doi: 10.1021/acsami.9b13121.

2018

Photosynthèse artificielle: transformer le soleil en carburants

T. Fontecave, M. Fontecave

Bulletin de l'Union des Physiciens 2018, 1000, 249-260

Arabidopsis thaliana DGAT3 is a [2Fe-2S] protein involved in TAG biosynthesis

L. Aymé, S. Arragain, M. Canonge, S. Baud, N. Touati, O. Bimai, F. Jagic, C. Louis-Mondésir, P. Briozzo, M. Fontecave, T Chardot

Scientific Reports 2018, 8, 17254

A Fully Noble Metal-Free Photosystem Based on Cobalt-Polyoxometalates Immobilized in a Porphyrinic Metal-Organic-Framework for Water Oxidation

G. Paille, M. Gomez-Mingot, C. Roch-Marchal, B. Lassalle-Kaiser, P. Mialane, M. Fontecave, C. Mellot-Draznieks, A. Dolbecq

J. Am. Chem. Soc. 2018, 140, 3613-3618

The ErpA/NfuA complex builds an oxidative resistant Fe-S cluster delivery pathway

B. Py, C. Gerez, A. Huguenot, C. Vidaud, M. Fontecave, S. Ollagnier de Choudens, F. Barras

J. Biol. Chem. 2018, 293, 7689-7702

Engineering a microbial [FeFe]-hydrogenase: do accessory clusters influence O₂ resistance and catalytic bias ?

G. Caserta, C. Papini, A. Adamska-Venkatesh, L. Pecqueur, C. Sommer, E. Reijerse, W. Lubitz, C. Gauquelin, I. Meynial-Salles, D. Pramanik, V. Artero, M. Atta, M. del Barrio, B. Faivre, V. Fourmond, C. Léger, M. Fontecave

J. Am. Chem. Soc. 2018, 140, 5516-5526

A Bioinspired Nickel(bis-dithiolene) Complex as a Novel Homogeneous Catalyst for Carbon Dioxide Electroreduction

T. Fogeron, T. K. Todorova, J.-P. Porcher, M. Gomez-Mingot, L.-M. Chamoreau, C. Mellot-Draznieks, Y. Li, M. Fontecave

ACS Catalysis 2018, 8, 2030-2038

Spectroscopic Investigations of a semi-synthetic [FeFe] hydrogenase with propane di-selenol as bridging ligand in the bi-nuclear subsite: comparison to the wild type and propane di-thiol variants

C. Sommer, S. Rumpel, S. Roy, V. Artero, M. Fontecave, E. Reijerse, W. Lubitz

J. Biol. Inorg. Chem. 2018, 23, 481-491

Electrostatic potential in tRNA-binding evolution of dihydrouridine synthases

C. Bou-Nader, D. Bregeon, L. Pecqueur, V. Guerineau, M. Fontecave, D. Hamdane

Biochemistry 2018, 57, 5407-5414

Immobilization of a full photosystem in the large pore MIL-101 Metal-organic Framework for CO₂ reduction

X. Wang, F. M. Wisser, J. Canivet, M. Fontecave, C. Mellot-Draznieks

ChemSusChem 2018, 11, 3315-3322

Structure searching methods: general discussion

M. Addicoat, C. S. Adjiman, M. Arhangelskis *et al.*

Faraday Discussions 2018, 211, 133-180

Applications of crystal structure prediction - inorganic and network structures: general discussion

V. Burger, F. Claeysens, D. W. Davies, G. M. Day, M. S. Dyer, A. Hare, Y. Li, C. Mellot-Draznieks, J. B. O. Mitchell, S. Mohamed, A. R. Oganov, S. L. Price, M. Ruggiero, M. R. Ryder, G. Sastre, J. C. Schön, P. Spackman, S. M. Woodley, Q. Zhu.

Faraday Discussions 2018, 211, 613-642

Novel Ni-IRMOF-74 Postsynthetically Functionalized for H₂ Storage Applications

H. Monte-Andres, G. Orcajo, C. Mellot-Draznieks, C. Martos, J. A. Botas, G. Calleja.

J. Phys. Chem. C 2018, 122, 49, 28123-28132

Pyranopterin Related Dithiolene Molybdenum Complexes as Homogeneous Catalysts for CO₂ Photoreduction

T. Fogeron, P. Retailleau, L.-M. Chamoreau, Y. Li, M. Fontecave

Angew. Chem. Int. Ed. Engl. 2018, 57, 17033-17037, doi: 10.1002/anie.201809084

2017

Molecular cobalt complexes with pendant amines for selective electrocatalytic reduction of carbon dioxide to formate

S. Roy, B. Sharma, J. Pecaut, P. Simon, M. Fontecave, P. Tran, E. Derat, V. Artero
J. Am. Chem. Soc. 2017, 139, 3685-3696

A synthetic redox biofilm made from metalloprotein - prion domain chimera nanowires
L. Altamura, C. Horvath, S. Rengaraj, K. Elouarzaki, C. Gondran, A. L. B. Maçon, C. Vendrely, V. Bouchiat, M. Fontecave, A. Le Goff, M. Holzinger, N. Duraffourg, V. Forge

Nature Chemistry 2017, 9, 157-163

Porous dendritic copper: an electrocatalyst for highly selective CO₂ reduction to formate in water/ionic liquid electrolyte

Tran Ngoc Huan, P. Simon, G. Rousse, I. Génois, V. Artero, M. Fontecave
Chem. Sci. 2017, 8, 742-747

The [FeFe]-hydrogenase maturation protein HydF : Structural and Functional Characterization

G. Caserta, L. Pecqueur, A. Adamska-Venkatesh, C. Papini, S. Roy, V. Artero, M. Atta, E. Reijerse, W. Lubitz, M. Fontecave

Nature Chem. Biol. 2017, 13, 779-784

Molecular polypyridine-based metal complexes as catalysts for the reduction of CO₂

N. Elgrishi, M. B. Chambers, X. Wang, M. Fontecave
Chem Soc. Rev. 2017 46, 761-796

Effects of Cations on the Structure and Electrocatalytic Response of Polyoxometalate-Based Coordination Polymers

W. Salomon, G. Paille, M. Gomez-Mingot, P. Mialane, J. Marrot, C. Roch-Marchal, G. Nocton, C. Mellot-Draznieks, M. Fontecave, A. Dolbecq

Crystal Growth & Design 2017 17, 1600–1609

Electrochemical reduction of CO₂ catalyzed by Fe-N-C materials: a structure-selectivity study

Tran Ngoc Huan, N. Ranjbar, G. Rousse, M. Sougrati, A. Zitolo, V. Mougél, F. Jaouen, M. Fontecave

ACS Catalysis 2017, 7, 1520-1525

Flavin-dependent epitranscriptomic world.

Lombard M, Hamdane D.

Arch Biochem Biophys. 2017, 632, 28-40

Ruthenium-Cobalt Dinuclear complexes as Photocatalysts for CO₂ reduction

X.Wang, V. Goudy, G. Genesio, J. Maynadié, D. Meyer, M. Fontecave
Chem. Commun 2017, 53, 5040-5043.

Non redox thiolation in transfer RNA occurring via sulfur activation by a [4Fe-4S] cluster

S. Arragain, O. Bimai, P. Legrand, S. Caillat, J.-L. Ravanat, N. Touati, L. Binet, M. Atta, M. Fontecave, B. Golinelli-Pimpaneau
Proc. Natl. Acad. Sci. 2017, 114, 7355-7360

Rhenium complexes based on 2-pyridyl-1,2,3-triazole ligands:
a new class of CO₂ reduction catalysts

H.Y.V. Ching, X. Wang, M. He, N. P. Holland, R. Guillot, C. Slim, S. Griveau, H. C. Bertrand, C. Policar, F. Bedioui, M. Fontecave
Inorg. Chem. 2017, 56, 2966-2976

Maximizing the Photocatalytic Activity of Metal-Organic Frameworks with Aminated-Functionalized Linkers: Sub-stoichiometric effects in MIL-125-NH₂

M. Chambers, X. Wang, L. Ellezam, Ov. Ersen, M. Fontecave, C. Sanchez, L. Rozes, C. Mellot-Draznieks
J. Am. Chem. Soc. 2017, 139, 8222-8228

Synthesis, Characterization and DFT Analysis of Bisterpyridyl-Based Molecular Cobalt Complexes

S. Aroua, T. K. Todorova, L.-M. Chamoreau, V. Mougel, H.-U. Reissig M. Fontecave
Inorg. Chem. 2017, 56, 5930-5940

The unusual ring scission of a quinoxaline-pyran-fused dithiolene system related to molybdopterin

T. Fogeron, P. Retailleau, L.-M. Chamoreau, M. Fontecave, Y. Li
Dalton Trans. 2017, 46, 4161-4164

A Dendritic Nanostructured Copper Oxide Electrocatalyst for the Oxygen-Evolving Reaction

Tran Ngoc Huan, G. Rousse, S. Zanna, I. T. Lucas, X. Xu, N. Menguy, V. Mougel, M. Fontecave
Angew. Chem. 2017, 56, 4792-4796

New Cobalt-Bisterpyridyl Catalysts for Hydrogen Evolution Reaction

S. Aroua, T. K. Todorova, V. Mougel, P. Hommes, H.-U. Reissig, M. Fontecave
ChemCatChem 2017, 9, 2099-2105

On the Role of Additional [4Fe-4S] Clusters with a Free Coordination Site in Radical-SAM Enzymes

E. Mulliez, V. Duarte, S. Arragain, M. Fontecave, M. Atta
Front. Chem. 2017, 5, 17. doi: 10.3389/fchem.2017.00017

The UbiK protein is necessary for coenzyme Q biosynthesis in *Escherichia coli* and *Salmonella enterica* and forms a complex with UbiJ

L. Loiseau, C. Fyfe, L. Aussel, M. Hajj Chehade, S. B. Hernández, B. Faivre, D. Hamdane, C. Mellot-Draznieks, B. Rascalou, L. Pelosi, C. Velours, D. Cornu, M. Lombard, J. Casadesús, F. Pierrel, M. Fontecave, F. Barras
J. Biol. Chem. 2017, 292, 11937-11950

Pt Immobilization within a Tailored Porous-Organic Polymer–Graphene Composite: Opportunities in the Hydrogen Evolving Reaction

A. Soliman, T. Ngoc Huan, M. Hassan, A. Abugable, W. Elmeahmey, Worood; S. Karakalos, M. Tsotsalas, M. Heinle, M. Fontecave, M. Alkordi
ACS Catalysis 2017, 7, 7847-7854

Enzyme activation with a synthetic catalytic coenzyme intermediate: nucleotide methylation by new flavoenzymes

C. Bou-Nader, D. Cornu, V. Guerineau, T. Fogeron, M. Fontecave, D. Hamdane
Angew. Chem. Int. Ed. 2017, 56, 12523-12527

Power of protein/tRNA functional assembly against aberrant aggregation

C. Bou-Nader, L. Pecqueur, D. Cornu, M. Dezi, C. Velours, M. Fontecave, D. Hamdane
Phys. Chem. Chem. Phys. 2017, 19, 28014-28027

Site-isolated manganese carbonyl on bipyridine-functionalities of periodic mesoporous organosilicas: efficient CO₂ photoreduction and detection of key reaction intermediates

X. Wang, I. Thiel, A. Fedorov, C. Copéret, V. Mougel, M. Fontecave
Chem. Sci. 2017, 8, 8204-8213

2016

Coenzyme Q biosynthesis: Evidence for a substrate access channel in the FAD-dependent monooxygenase Coq6

A. Ismail, V. Leroux, M. Smaja, L. Gonzalez, M. Lombard, F. Pierrel, C. Mellot-Draznieks, M. Fontecave
PLOS Computational Biology 2016, 12, e1004690

Synthesis, electrochemical and spectroscopic properties of ruthenium(II) complexes containing 2,6-di(1*H*-imidazo[4,5-*f*][1,10]phenantroline-2-yl)aryl ligands

V. Goudy, J. Maynadié, X. Le Goff, D. Meyer, M. Fontecave.
New. J. Chem. 2016, 40, 1704-1714

Cu/Cu₂O electrodes and CO₂ reduction to formic acid: Effects of organic additives on surface morphology and activity

Tran Ngoc Huan, P. Simon, A. Benayad, L. Guetaz, V. Artero, M. Fontecave
Chemistry 2016, 22, 14029-14035

Synthesis and Reactivity of a Bio-inspired Dithiolene ligand and its Mo-oxo complex

J.-P. Porcher, T. Fogeron, M. Gomez-Mingot, L.-M. Chamoreau, Yun Li, M. Fontecave
Chemistry 2016, 22, 4447-4453

A simple and non-destructive method for assessing the incorporation of bipyridine dicarboxylates as linkers within metalorganic frameworks

C. H. Hendon, J. Bonnefoy, E. A. Quadrelli, J. Canivet, M.B. Chambers, G. Rouse, A. Walsh, M. Fontecave, C. Mellot-Draznieks.

Chemistry 2016, 22, 3713-3718

Chimie bioinspirée pour l'énergie: Transformer le soleil en carburants (Bioinspired chemistry for energy means: Conversion of sun into fuels)

M. Fontecave, M. Gomez-Mingot

L'Actualité Chimique 2016, 408-409, 46-50

Réduction photo-catalytique de CO₂ dans des matériaux à charpentes hybrides : contrôle de l'absorption de lumière et incorporation de catalyseurs moléculaires

G. Paille, M. Fontecave, C. Mellot-Draznieks

L'Actualité Chimique 2016, 408-409, 64-67

Artificial Hydrogenases based on Cobaloximes and Heme Oxygenase

M. Bacchi, E. Veinberg, M. J. Field, J. Niklas, O. G. Poluektov, M. Ikeda-Saito, M. Fontecave, V. Artero

ChemPlusChem 2016, 81, 1083-1089

CO₂ reduction to CO in water: carbon nanotube-gold nanohybrid as a selective and efficient electrocatalyst.

Tran Ngoc Huan, P. Prakash, P. Simon, G. Rousse, X. Xiangzhen, V. Artero, E. Gravel, E. Doris, M. Fontecave

ChemSusChem 2016, 9, 2317-2320

Chemical assembly of multiple cofactors: the heterologously expressed multidomain [FeFe]-hydrogenase from *Megasphaera elsdenii*.

G. Caserta, A. Adamska-Venkatesh, L. Pecqueur, M. Atta, V. Artero, R. Souvik, E. Reijerse, W. Lubitz, M. Fontecave

Biochim. Biophys. Acta, Bioenergetics 2016, 1857, 1734-1740

A chemical chaperone induces inhomogeneous conformational changes in flexible proteins

D. Hamdane, C. Velours, D. Cornu, M. Nicaise, M. Lombard, M. Fontecave

Phys. Chem. Chem. Phys. 2016, 18, 20410-20421

A Cobalt Complex with a bioinspired molybdopterin-like ligand: a Catalyst for Hydrogen Evolution

T. Fogeron, J.-P. Porcher, M. Gomez-Mingot, T. K. Todorova, L.-M. Chamoreau, C. Mellot-Draznieks, Yun Li, M. Fontecave

Dalton Trans 2016, 45, 14754-14763.

Porous-Organic Polymers as Platforms for Heterogeneous Photochemical Catalysis

M. H. Alkordi, R. R. Haikal, X. Wang, Y. S. Hassan, M. R. Parida, M. Banavoth, O. F. Mohammed, P. J. Pellechia, M. Fontecave

ACS Applied Materials and Interfaces 2016, 8, 19994-20002

Flavin-dependent methylation of RNAs: complex chemistry for a simple modification

D. Hamdane, H. Grosjean, M. Fontecave

J. Mol. Biol. 2016, 428, 4867-4881

Reactivity of the excited states of the H-cluster of FeFe hydrogenase

M. Sensi, C. Baffert, C. Greco, G. Caserta, C. Gauquelin, L. Saujet, M. Fontecave, S. Roy, V. Artero, P. Soucaille, I. Meynial-Salles, H. Bottin, L. de Gioia, V. Fourmond, C. Léger, Luca Bertini
J. Am. Chem. Soc. 2016, 138, 13612-13618

2015

Photocatalytic CO₂ Reduction Utilizing Cp*Rh-based Catalysts in Solution and Heterogenized within Metal-Organic Frameworks

M. B. Chambers, X. Wang, N. Elgrishi, C. H. Hendon, A. Walsh, J. Bonnefoy, J. Canivet, E. A. Quadrelli, D. Farrusseng, C. Mellot-Draznieks, M. Fontecave
ChemSusChem 2015, 8, 603-608

Artificially Maturated [FeFe] Hydrogenase from *Chlamydomonas reinhardtii*: A HYSCORE and ENDOR Study of a Non-Natural H-cluster

A. Adamska-Venkatesh, T. R. Simmons, J. Siebel, V. Artero, M. Fontecave, E. Reijerse, W. Lubitz
Phys. Chem. Chem. Phys. 2015, 17, 5421-5430

Artificial hydrogenases: biohybrid and supramolecular systems for catalytic hydrogen production or uptake

G. Caserta, S. Roy, M. Atta, V. Artero, M. Fontecave
Curr. Op. Chem. Biol. 2015, 25, 36-47

A Noble Metal-Free Proton-Exchange Membrane Fuel Cell based on Bio-inspired Molecular Catalysts

P. D. Tran, A. Morozan, S. Archambault, J. Heidkamp, P. Chenevier, H. Dau, M. Fontecave, A. Martinent, B. Jousseme, V. Artero
Chem. Sci. 2015, 6, 2050-2053

Turning it off! Shutting down hydrogen evolution during homogeneous CO₂ reduction to CO by cobalt-terpyridine complexes

N. Elgrishi, M. B. Chambers, M. Fontecave
Chem. Sci. 2015, 6, 2522 – 2531

From molecular copper complexes to composite electrocatalytic materials for selective reduction of CO₂ to formic acid

Tran Ngoc Huan, E. S. Andreiadis, J. Heidkamp, P. Simon, E. Derat, S. Cobo, G. Royal, H. Dau, V. Artero, M. Fontecave
J. Mat. Chem. A 2015, 3, 3901-3907

Versatile functionalization of carbon electrodes with a polypyridine ligand: metallation and electrocatalytic H⁺ and CO₂ reduction

N. Elgrishi, S. Griveau, M. B. Chambers, F. Bedioui, M. Fontecave
Chem. Commun. 2015, 51, 2995 – 2998

Bioinspired Tungsten Dithiolene Catalysts for Hydrogen Evolution: A Combined Electrochemical, Photochemical and Computational Study

M. Gomez-Mingot, J.-P. Porcher, T. K. Todorova, T. Fogeron, C. Mellot-Draznieks, Y. Xu-Li, M. Fontecave
J. Phys. Chem. B 2015, 119, 13524-13533

Sustainable Chemistry for Energizing the Planet

M. Fontecave

Angew. Chem. Int Ed. 2015, 54, 6946-6947.

Les carburants solaires: Photosynthèse artificielle et procédés électrochimiques

N. Kaeffer, N. Queyriaux, M. Chavarot-Kerlidou, M. Fontecave, V. Artero

L'Actualité Chimique 2015, 397-398, 63-68

Electro-assisted Reduction of CO₂ to CO and Formaldehyde by the (TOA)₆[α-SiW₁₁O₃₉Co()] Polyoxometalate

M. Girardi, S. Blanchard, S. Griveau, P. Simon, M. Fontecave, F. Bedioui, A. Proust

Eur. J. Chem. 2015, 22, 3642-3648

Flavin-protein Complexes: Aromatic Stacking driven by a Single Hydrogen Bond

D. Hamdane, C. Bou-Nader, D. Cornu, G. Hui-Bon-Hoa, M. Fontecave

Biochemistry 2015, 54, 4354-4364

Spectroscopic identification of the bridging amine in the active site of [FeFe] hydrogenase using isotopologues of the H-cluster.

A. Adamska-Venkatesh, S. Roy, J. F. Siebel, T. R. Simmons, M. Fontecave, V.

Artero, E. Reijerse, W.L. Lubitz

J. Am. Chem. Soc. 2015, 137, 12744-12747

A bio-inspired Molybdenum Complex as a Catalyst for the Photo- and Electroreduction of Protons

J.-P. Porcher, T. Fogeron, M. Gomez-Mingot, E. Derat, L.-M. Chamoreau, Y. Li, M. Fontecave

Angew. Chem. Int. Ed. 2015, 54, 14090-14093

From Enzyme Maturation to Synthetic Chemistry: The case of Hydrogenases

V. Artero, G. Berggren, M. Atta, G. Caserta, S. Roy, L. Pecqueur, M. Fontecave

Accounts Chem Res. 2015, 48, 2380-2387

Coq6 is Responsible for the C4-Deamination Reaction in Coenzyme Q Biosynthesis in *Saccharomyces cerevisiae*

M. Ozeir, L. Pelosi, A. Ismail, C. Mellot-Draznieks, M. Fontecave, F. Pierrel.

J. Biol. Chem. 2015, 290, 24140-24151

An extended dsRBD is required for post-transcriptional modification in human tRNAs

C. Bou-Nader, L. Pecqueur, D. Bregeon, A. Kamah, V. Guérineau, B. Golinelli-Pimpaneau, B.G. Guimarães, M. Fontecave, D. Hamdane

Nucleic Acids Res. 2015, 43, 9446-9456

2014

UbiJ, a new gene required for aerobic growth and proliferation in macrophage, is involved in coenzyme Q biosynthesis in *Escherichia coli* and *Salmonella enterica* serovar typhimurium:

L. Aussel, L. Loiseau, M.H. Chehade, B. Pocachard, M. Fontecave, F. Pierrel, F. Barras

J. Bacteriol. 2014, 196, 70-79

Mimicking Hydrogenases: from Biomimetics to Artificial Enzymes

T. R. Simmons, G. Berggren, M. Bacchi, M. Fontecave, V. Artero

Coord. Chem. Rev. 2014, 270-271, 127-150.

An EPR/HYSCORE, Mössbauer, and resonance Raman study of the hydrogenase maturation enzyme HydF – a model for N coordination to [4Fe-4S] clusters

G. Berggren, R. Garcia, X. Brazzolotto, M. Clemancey, S. Gambarelli, M. Atta, J.-M.

Latour, H. L. Hernández, S. Subramanian, M. K. Johnson, M. Fontecave

J. Biol. Inorg. Chem. 2014, 19, 75-84

Biosynthesis and physiology of coenzyme Q in bacteria

F. Barras, L. Aussel, F. Pierrel, L. Loiseau, M. Lombard, M. Fontecave

Biochim. Biophys. Acta, Bioenergetics 2014, 1837, 1004-1011

Terpyridine complexes of first row transition metals and electrochemical reduction of CO₂ to CO.

N. Elgrishi, M.B. Chambers, V. Artero, M. Fontecave

Phys. Chem. Chem. Phys. 2014, 16, 13635-44

TtcA a new tRNA-thioltransferase with an Fe-S cluster.

D. Bouvier, N. Labessan, M. Clemancey, J-M Latour, J-L Ravanat, M. Fontecave, M. Atta

Nucleic Acid Res. 2014, 42, 7960-70

An integrative computational model for large-scale identification of metalloproteins in microbial genomes: a focus on iron-sulfur cluster proteins

Johan Estellon, Sandrine Ollagnier de Choudens, Myriam Smadja, Marc Fontecave, Yves Vandenbrouck

Metallomics, 2014, 6, 1913–1930

Cobaloxime-Based Artificial Hydrogenases

M. Bacchi, G. Berggren, J. Niklas, E. Veinberg, M. W. Mara, M. L. Shelby, O. G. Poluektov, L. X. Chen, D. M. Tiede, C. Cavazza, M. J. Field, M. Fontecave, Vincent Artero

Inorg. Chem. 2014, 53, 8071-8082

Theoretical Modeling of Low-Energy Electronic Absorption Bands in Reduced Cobaloximes

A. Bhattacharjee, M. Chavarot-Kerlidou, J. L. Dempsey, H. B. Gray, E. Fujita, J. T.

Muckerman, M. Fontecave, V. Artero, G. M. Arantes, M. J. Field

ChemPhysChem 2014, 15, 2951-2958

Electrode materials and artificial photosynthetic systems

P. D. Tran, M. Fontecave, V. Artero in "Bioinspired Catalysis: Metal-Sulfur Complexes" Wolfgang Weigand and Philippe Schollhammer, editors 2015, Wiley-VCH Verlag GmbH & Co. KGaA, Boschstr. 12, 69469 Weinheim, Germany, pp 385-410.

Molecular Investigation of Iron-sulfur cluster Assembly Scaffolds under Stress
B. Blanc, M. Clemancey, J.-M. Latour, M. Fontecave, S. Ollagnier de Choudens
Biochemistry 2014, 53, 7867-7869

2013

Molecular Engineering of a Cobalt-based Electrocatalytic Nanomaterial for H₂ Evolution under Pure Aqueous Conditions
E. S. Andreiadis, P.-A. Jacques, P.D. Tran, A. Leyris, M. Chavarot-Kerlidou, B. Joussemme, M. Matheron, J. Pécaut, S. Palacin, M. Fontecave, V. Artero
Nature Chemistry 2013, 5, 48-53

In vivo [Fe-S] cluster acquisition by IscR and NsrR, two stress regulators in Escherichia coli
Daniel Vinella, Laurent Loiseau, Sandrine Ollagnier de Choudens, Marc Fontecave and Frédéric Barras
Molecular Microbiology 2013, 87, 493-508

Two Fe-S clusters catalyze sulfur insertion by radical-SAM methylthiotransferases
F. Forouhar, S. Arragain, M. Atta, S. Gambarelli, J.-M. Mouesca, M. Hussain, R. Xiao, S. Kieffer-Jaquinod, J. Seetharaman, T. B. Acton, G. T. Montelione, E. Mulliez, J. F. Hunt, M. Fontecave
Nature Chemical Biology 2013, 9, 333-338

Solar fuels generation and molecular systems: Is it homogeneous or heterogeneous catalysis?
V. Artero, M. Fontecave
Chem. Soc. Rev. 2013, 42, 2338-2356

Catalytic hydrogen production by Ni-Ru mimic of NiFe hydrogenases involves a proton-coupled electron transfer step
S. Canaguier, V. Fourmond, C. Perotto, J. Fize, J. Pécaut, M. Fontecave, M. J. Field, V. Artero
Chem. Commun. 2013, 49, 5004-5006

Biomimetic assembly and activation of [FeFe]-hydrogenases
G. Berggren, A. Adamska, C. Lambertz, T. Simmons, J. Esselborn, M. Atta, S. Gambarelli, JM Mouesca, E. Reijerse, W. Lubitz, T. Happe, V. Artero, M. Fontecave
Nature, 2013, 499, 66-70

Artificial Photosynthesis as a Frontier Technology for Energy Sustainability
T. Faunce S. Styring, M.R. Wasielewski, G.W. Brudvig, A. W. Utherford, J. Messinger, A. F. Lee, C. L. Hill, H. deGroot, M. Fontecave, D. R. MacFarlane, B. Hankamer, D. G. Nocera, D. M. Tiede, H. Dau, W. Hillier, L. Wang

Energy Environ. Sci. 2013, 6, 1074-1076

Dye-Sensitized Nanostructured Crystalline Mesoporous Tin-doped Indium Oxide Films with Tunable Thickness for Photoelectrochemical Applications

W. Hamd, M. Chavarot-Kerlidou, J. Fize, G. Muller, A. Leyris, M. Matheron, E. Courtin, M. Fontecave, C. Sanchez, V. Artero, C. Laberty-Robert

J. Mater. Chem. A 2013, 1, 8217-8225

Ubil, a new gene in *Escherichia coli* Coenzyme Q biosynthesis, is involved in aerobic C5-hydroxylation

M. Hajj Chehade, L. Loiseau, M. Lombard, L. Pecqueur, A. Ismail, M. Smadja, B. Golinelli-Pimpaneau, C. Mellot-Draznieks, O. Hamelin, L. Aussel, S. Kieffer-Jaquinod, N. Labessan, F. Barras, M. Fontecave, F. Pierrel.

J. Biol. Chem. 2013, 288, 20085-20092

A computational study of the mechanism of hydrogen evolution by cobalt(diimine-dioxime) catalysts

A. Bhattacharjee, E. S. Andreiadis, M. Chavarot-Kerlidou, M. Fontecave, M. J. Field, V. Artero

Chemistry 2013, 19, 15166-15174

Spontaneous activation of [FeFe]-hydrogenases by an inorganic [2Fe] active site mimic

J. Esselborn, C. Lambertz, A. Adamska, T. Simmons, G. chambers, J. Noth, J. Siebel, A. Hemschemeier, V. Artero, E. Reijerse, M. Fontecave, W. Lubitz, T. Happe

Nature Chem. Biol. 2013, 9, 607-609

Engineering the Optical Response of the Titanium-MIL-125 Metal–Organic Framework through Ligand Functionalization

C. H. Hendon, D. Tiana, M. Fontecave, C. Sanchez, L. D'arras, C. Sassoey, L. Rozes, C. Mellot-Draznieks, A. Walsh

J. Am. Chem. Soc. 2013, 135, 10942-10945

Activation du dioxyde de carbone: enzymes, catalyseurs bioinspirés et photosynthèse artificielle

N. Elgrishi, V. Artero, M. Fontecave

L'Actualité Chimique 2013, 371-372, 95-100

Activation of a unique flavin-dependent tRNA-methylating agent

D. Hamdane, E. Bruch, S. Un, M. Field, M. Fontecave

Biochemistry 2013, 52, 8949-8956

2012

The methylthiolation reaction mediated by the Radical-SAM enzymes.

M. Atta, S. Arragain, M. Fontecave, E. Mulliez, J. F. Hunt, J. D. Luff, F. Forouhar.

Biochim. Biophys. Acta 2012, 1824, 1223-1230

Combined experimental – theoretical characterization of the hydrido-cobaloxime [HCo(dmgH)₂(PⁿBu₃)]

A. Bhattacharjee, M. Chavarot-Kerlidou, E.S. Andreiadis, M. Fontecave, M. J. Field, V. Artero

Inorg. Chem. 2012, 51, 7087-93

Phosphine coordination to a cobalt diimine-dioxime catalyst increases stability during light-driven H₂ production

P. Zhang, P.-A. Jacques, M. Chavarot-Kerlidou, M. Wang, L. Sun, M. Fontecave, V. Artero

Inorg. Chem. 2012, 51, 2115-2120

Molecular organisation, biochemical function, cellular role and evolution of NfuA, an atypical Fe-S carrier.

B. Py, C. Gerez, S. Angelini, S. Ollagnier-de Choudens, D. Vinella, L. Loiseau, M. Fontecave, F. Barras

Mol. Microbiol. 2012, 86, 155-171

Evolution of Fe-S cluster biogenesis in the anaerobic parasite *Blastocystis*

A. D. Tsaousis, E. Gentekaki, S. Ollagnier-de-Choudens, S. Long, D. Gaston, A. Stechmann, M. Fontecave, B. Py, F. Barras, J. Lukeš, A. J. Roger

Proc. Natl. Acad. Sci. 2012, 109, 10426-31

A Janus cobalt-based catalytic material for electro-splitting of water.

S. Cobo, J. Heidkamp, P.-A. Jacques, J. Fize, V. Fourmond, L. Guetaz, B. Jusselme, R. Salazar, V. Ivanova, H. Dau, S. Palacin, M. Fontecave, V. Artero

Nature Materials 2012, 11, 802-807

Over-expression of the Coq8 kinase in *Saccharomyces cerevisiae* coq null mutants allows for accumulation of diagnostic intermediates of the Coenzyme Q₆ biosynthetic pathway

L. X. Xie, M. Ozeir, J. Y. Tang, J. Y. Chen, S. Kieffer-Jaquinod, M. Fontecave, C. F. Clarke, F. Pierrel

J. Biol. Chem. 2012, 287, 23571-81

4-demethylwyosine synthase from *Pyrococcus abyssi* is a Radical-SAM enzyme with an additional [4Fe-4S]⁺² cluster which interacts with the pyruvate co-substrate

P. Perche-Letuvée, V. Kathirvelu, G. Berggren, M. Clemancey, J.-M. Latour, V. Maurel, T. Douki, J. Armengaud, E. Mulliez, M. Fontecave, R. Garcia-Serres, S. Gambarelli, M. Atta.

J. Biol. Chem. 2012, 287, 41174-41185

Mesoporous α -Fe₂O₃ Thin Films Synthesized via the Sol-gel Process for Light-driven Water Oxidation

W. Hamd, S. Cobo, J. Fize, G. Baldinozzi, W. Schwartz, M. Reymermier, A. Pereira, M. Fontecave, V. Artero, C. Laberty-Robert, C. Sanchez

Phys. Chem. Chem. Phys., 2012, 14, 13224–13232.

Flavin conjugates for delivery of peptide nucleic acids

F. Marlin, P. Simon, S. Bonneau, P. Alberti, C. Cordier, C. Boix, L. Perrouault, A. Fossey, T. Saison-Behmoaras, M. Fontecave, C. Giovannageli
ChemBioChem 2012, 13, 2593-2598

FAD/Folate-Dependent tRNA Methyltransferase: Flavin as a new methyl-transfer agent

D. Hamdane, M. Argentini, D. Cornu, B. Golinelli-Pimpaneau, M. Fontecave
J. Am. Chem. Soc. 2012, 134, 19739-19745