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RESEARCH INTERESTS

Electrocatalysis for energy means and Analytical Electrochemistry

- Electrocatalysis/ Catalysis
- Nanomaterials
- Homogeneous and heterogeneous catalysts for proton/CO_2 reduction and water splitting
- Bioinspired molecular complexes for proton and CO_2 reduction
- Surface modification, electrochemical grafting, thin films
- Photocatalysis
- Electrochemical (bio)sensors
- Bioelectrochemistry
- Ionic liquids

SUMMARY

I have expertise on the field of electrochemistry, catalysis and materials. I have a strong knowledge in the physicochemical and electrochemical characterization of solid and molecular assemblies for energy storage devices (supercapacitors, electrolyzers) and sensing platforms. Our target is to develop novel catalyst that can selectively and efficiently convert CO_2 into fuels and do water splitting into H_2 and O_2. He are interested in studying the physicochemical, electrocatalytic, photocatalytic and photoelectrocatalytic properties of a set of different homogeneous and hybrid heterogeneous catalysts. We also study different strategies to covalently graft these catalysts on conducting surfaces. During my PhD, obtained in the Institute of Electrochemistry of the University of Alicante (Spain), I also gain a deep expertise on bioelectrochemistry of proteins, in particular, immobilization methods to study electron transfer processes in redox proteins and the development of analytical biosensing platforms.

PUBLICATIONS

***h*-index : 16, number papers : 37, citations : 682**, ORCID ID: 0000-0002-1557-2648

2021

1- "Understanding the Photocatalytic Reduction of CO2 with Heterometallic Molybdenum(V) Phosphate Polyoxometalates in Aqueous Media", Y. Benseghir, A. Solé-Daura, P. Mialane, J. Marrot, L. Dalecky, S.

Béchu, M. Frégnaux, M. Gomez-Mingot, M. Fontecave, C. Mellot-Draznieks, A. Dolbecq, **ACS Catalysis 2022, 12, 1, 453–464.**

2- "Carbon Dioxide Reduction: A Bioinspired Catalysis" Y. Li, M. Gomez-Mingot, T. Fogeron, M. Fontecave, **Accounts of Chemical Research, 2021, 54, 23, 4250–4261.**

2020

1. "Imidazolium and Pyrrolidinium Based Ionic Liquids as Co-catalysts for CO_2 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, doi.org/10.1021/acs.jpcc.0c07556.
2. "Structure-directing role of immobilized polyoxometalates in the synthesis of porphyrinic Zr-based metal–organic frameworks", M. Duguet, A. Lemarchand, Y. Benseghir, P. Mialane, M. Gomez-Mingot, C. Roch-Marchal, M. Haouas, M. Fontecave, C. Mellot-Draznieks, C. Sassoye, A. Dolbecq, **Chemical Communications**, 2020, 56, 10143-10146.
3. "Co-immobilization of a Rh catalyst and a Keggin Polyoxometalate in the UiO-67 Zr-based Metal-OrganicFramework: in Depth Structural Characterization and Photocatalytic Properties for CO2 Reduction", Y. Benseghir, A. Lemarchand, M. Duguet, P. Mialane, M. Gomez-Mingot, C. Roch-Marchal, T. Pino, M. Ha-Thi, M. Haouas, M. Fontecave, A. Dolbecq, C. Sassoye, C. Mellot-Draznieks, **Journal of the American Chemical Society**, 2020, 142(20), 9428-9438.

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4. "Thin Films of Fully Noble Metal-Free POM@MOF for Photocatalytic Water Oxidation", G. Paille, M. Gomez-Mingot, C. Roch-Marchal, M. Haouas, Y. Benseghir, T. Pino, M.-H. Ha-Thi, G. Landrot, P. Mialane, M. Fotencave, A. Dolbecq, C. Mellot-Draznieks, **ACS Applied Materials & Interfaces, 2019, 11, 51, 47837-47845.**
5. "An unprecedented {Ni14SiW9} hybrid polyoxometalate with photocatalytic hydrogen evolution activity", G. Paille, A. Boulmier, A. Bensaid, M.-H. Ha-Thi, T.-T. Tran, T. Pino, J. Marrot, E. Rivière, C. H. Hendon, O. Oms, M. Gomez-Mingot, M. Fontecave, C. Mellot-Draznieks, A. Dolbecq, P. Mialane, **Chemistry Communications, 2019, 55(29), 4166-4169.**
6. "Nickel Complexes Based on Molybdopterin-like Dithiolenes: Catalysts for CO_2 Electroreduction", T. Fogeron, P. Retailleau, M. Gomez-Mingot, Y. Li, M. Fontecave, **Organometallics, 2019, 38(6), 1344-1350.**

2018

7. "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, **Journal of the American Chemical Society, 2018, 140(10), 3613-3618.**
8. "Electrochemical Synthesis and the Functionalization of Few Layer Graphene in Iionic Liquid and Redox Ionic Liquid", M. Gomez-Mingot, C.A. Amarnath, H. Randriamahazaka, J. Ghilane, **Science China Chemistry**, **2018, 61(5), 598-603.**
9. "A Bioinspired Nickel(bis-dithiolene) Complex as a 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(3), 2030-2038.**

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10. “Effect of Cations on the Structure and Electrocatalytic Response of Polyoxometalate-based Coordination Polymers", W. Salomon, G. Paille, M. Gomez-Mingot, P. Mialane, J. Marrot, G. Nocton, C. Mellot-Draznieks, M. Fontecave, A. Dolbecq, **Crystal Growth & Design, 2017, 17(4) 1600-1609.**

2016

11. "Bioinspired Chemistry for Energy Means: Conversion of Sun into Fuels”, M. Fontecave, M. Gomez-Mingot, **L’actualité Chimique, 2016, 408-409:46-50**.
12. "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, Y. Li, M. Fontecave, **Dalton Transactions, 2016, 45, 14754-14763.**
13. “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, Y. Li, M. Fontecave, **Chemistry A European Journal, 2016, 22, 4447-4453.**
14. “High Temperature Low Vacuum Synthesis of a Freestanding Three-dimensional Graphene Nano-ribbon Foam Electrode“, L.C.S. Figueiredo-Filho, D.A. C. Brownson, B.L. Riehl, B.D. Riehl, M. Gómez-Mingot, J. Iniesta, O. Fatibello-Filho, C.E. Banks, **Journal of Materials Chemistry A, 2016, 4, 2617-2629.**
15. “Surface Initiated Immobilization of Molecules Contained in an Ionic Liquid Framework“, S. Bouden, M. Gomez-Mingot, H. Randriamahazaka, J. Ghilane, **Analytical Chemistry, 2016, 88 (1), 1017-1021.**

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16. “A Bioinspired 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, **Angewandte Chemie International Edition, 2015, 54, 14090-14093.**
17. “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. Li, M. Fontecave, **Journal of Physical Chemistry B, 2015, 119, 13524-13533.**

2014

18. “Oxidative Grafting of a Redox Molecule Based Ionic Liquid onto an Electrode Surface: Anion Exchange within a Layer”, M. Gómez-Mingot, V. Bui-Thi-Tuyet, G. Trippé-Allard, J. Ghilane, H. Randriamahazaka, **ChemElectroChem, 2014, 1(9), 1467-1470.**
19. “Electrochemical Devices for Monitoring Biomarkers in Embryo Development”, M. Gómez-Mingot, S. Griveau, F. Bedioui, C.E. Banks, V. Montiel, J. Iniesta, **Electrochimica Acta, 2014, 140, 42-48.**
20. ”Surface Treatment Strategies on Catalytic Metal Nanoparticles”, F.J. Vidal-Iglesias, M. Gómez-Mingot, J. Solla-Gullón, Chapter 42 in **Handbook in Nanoparticles, Springer Int. Publising, 2016, 1101-1125.**
21. “Screen-printed Graphite Macroelectrodes for the Direct Electron Transfer of Cytochrome c: A Deeper Study of the Effect of pH on the Conformational States, Immobilization and Peroxidase Activity”, M. Gómez-Mingot, V. Montiel, C.E. Banks, J. Iniesta, **Analyst, 2014, 139, 1442-1448.**

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22. "Exploring the Electrochemical Performance of Graphitic Paste Electrodes: Graphene vs. Graphite", L.C. S. Figueiredo-Filho, D.A. C. Brownson, M. Gómez-Mingot, J. Iniesta, O. Fatibello-Filho, C.E. Banks, **Analyst, 2013, 138, 6354-6364.**

23. "Freestanding Three-dimensional Graphene Foam Gives Rise to Beneficial Electrochemical Signatures Within Non-aqueous Media", D.A. C. Brownson, L.C. S. Figueiredo-Filho, X. Ji, M. Gómez-Mingot, J. Iniesta, O. Fatibello-Filho, D.K. Kampouris, C.E. Banks, **Journal of Materials Chemistry A, 2013, 1, 5962-5972.**

24. "The Electrochemistry of Arylated Anthraquinones in Room Temperature Ionic Liquids", A. Gomis-Berenguer, M. Gómez-Mingot, L. García-Cruz, T. Thiemann, C.E. Banks, V. Montiel, J. Iniesta, **Journal of Physical Organic Chemistry, 2013, 26, 367-375.**

25. "The Fabrication of Novel Screen Printed Single-Walled Carbon Nanotube Electrodes: Electroanalytical Applications", J.P. Metters, M. Gómez-Mingot, J. Iniesta, R.O. Kadara, C.E. Banks, **Sensors and Actuators B-Chemical, 2013, 177, 1043-1052.**

26. "Electrochemical Nitration of Myoglobin at Tyrosine 103: Structure and Stability", M. Gómez-Mingot, L.A. Alcaraz, J. Heptinstall, A. Donaire, M. Piccioli, V. Montiel, J. Iniesta, **Archives of Biophysics and Biochemistry, 2013, 529, 26-33.**

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27. "Electrochemistry of Q-graphene", E.P. Randviir, D.A.C. Brownson, M. Gómez-Mingot, D.K. Kampouris, J. Iniesta, C.E. Banks, **Nanoscale, 2012, 4, 6470-6480.**

28. "Exploring the Electrochemical Behavior of Screen Printed Graphite Electrodes in a Room Temperature Ionic Liquid", A. Gomis Berenguer, M. Gómez-Mingot, V. Montiel, A. Canals, T. Thiemann, R.O. Kadara, C.E. Banks, J. Iniesta, **RSC Advances, 2012, 2, 7735-7742.**

29. "Facile Synthetic Fabrication of Iron Oxide Particles and Novel Hydrogen Superoxide Supercapacitors", P.M. Hallam, M. Gómez-Mingot, D.K. Kampouris, C.E. Banks, **RSC Advances, 2012, 2, 6672-6679.**

30. "Graphene Electrochemical Supercapacitors: the Influence of Oxygen Functional Groups", W. Deng, X. Ji, M. Gómez-Mingot, F. lu, Q. Chen, C.E. Banks, **Chemistry Communications, 2012, 48, 2770-2772.**

31. "Development of a Novel Analytical Approach Combining the Quantification of Amino Acids, Organic Acids and Glucose Using HPLC-UV-Vis and HPLC-MS with Screening via NMR", M. Gómez-Mingot, L.A. Alcaraz, D.A. MacIntyre, B. Jiménez, A. Pineda-Lucena, V. Montiel, C.E. Banks, J. Iniesta, **Analytical Methods, 2012, 4, 284-290.**

32. "Graphene Oxide Gives Rise to Unique and Intriguing Voltammetry", D.A.C. Brownson, A.C. Lacombe, M. Gómez-Mingot, C.E. Banks, **RSC Advances, 2012, 2, 665-668.**

2011

33. "CVD Graphene Electrochemistry: Biologically Relevant Molecules", D.A.C. Brownson, M. Gómez-Mingot, C.E. Banks, **Physical Chemistry and Chemical Physics, 2011, 13, 20284-20288.**

34. "Direct Oxidation of Methionine at Screen Printed Graphite Macroelectrodes: Towards Rapid Sensing Platforms", M. Gómez-Mingot, J. Iniesta, V. Montiel, R.O. Kadara, C.E. Banks, **Sensors and Actuators B-Chemical, 2011, 155, 831-836.**

35. "Screen Printed Graphite Macroelectrodes for the Direct Electron Transfer of Cytochrome c", M. Gómez-Mingot, J. Iniesta, V. Montiel, R.O. Kadara, C.E. Banks, **Analyst, 2011, 136, 2146-2150**.

36. “Nitration of Lysozyme by Ultrasonic Waves; Demonstration by Immunochemistry and Mass Spectrometry”, S. Dean, M. Cox, J. Heptinstall, D.J. Walton, V.A. Mikhailov, H.J. Cooper, M. Gómez-Mingot, J. Iniesta, **Ultrasonics Sonochemistry, 2011, 18, 334-344.**

2010

37. “Simple and Rapid Analytical Method for the Simultaneous Determination of Five Surfactants in Hair Conditioners”, A. Terol, M. Gómez-Mingot, S.E. Maestre, S. Prats, J.L.Todolí, E. Paredes, **International Journal of Cosmetic Science, 2010, 32, 65-72.**