

Dr. Oriol Planas

Queen Mary University of London, Mile End Road, E1 4NS London, United Kingdom

Birth date, sex: 11/06/1990, male (he/him)

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Academic Background

University of Girona

09/2013 – 02/2018 **Ph.D. in Chemistry.** Thesis title: *Cobalt-Catalyzed C-H Activation: From Mechanistic Studies to Synthetic Methodologies.*

09/2012 – 06/2013 **M.Sc. in Chemistry.** Thesis title: *Modeling iron halogenases: Synthesis and reactivity of halide-iron(IV)-oxo compounds.*

09/2008 – 06/2012 **B.Sc. in Chemistry.** Thesis title: *N₂O activation with transition metals.*

Research Experience

Queen Mary University of London (United Kingdom)

11/2021 – current **Lecturer in Organic Chemistry**

Max-Planck Institut für Kohlenforschung (Germany)

05/2018 – 09/2021 **Postdoctoral Research Associate.** Supervisor: Dr. Josep Cornella.

University of Girona (Spain)

09/2013 – 02/2018 **Ph.D. Student.** Supervisor: Dr. Xavi Ribas and Dr. Anna Company.

09/2012 – 06/2013 **M. Sc. Student.** Supervisor: Dr. Miquel Costas and Dr. Anna Company.

University of California at Irvine (California, USA)

03/2016 – 06/2016 **Visiting Researcher.** Supervisor: Prof. Vy M. Dong

Awards and Fellowships

Awards

2022 **Thieme Chemistry Award** from Thieme editorial.

2021 **Suschem Award Finalist** from the RSEQ, Spain.

2021 **Young Researcher Award - Postdoctoral stage** from the RSEQ, Spain.

2019 **Best Ph.D. in Chemistry** (2018) from the University de Girona, Spain.

2019 **Poster prize** from the Münster Symposium on Cooperative Effects in Chemistry.

Fellowships and grants

2022 **Royal Society Research Grant** (RGS/R1/221326, £19,800).

2019 **Marie Skłodowska-Curie Individual Fellowship** from the European Union (ID: 833361, BiREDOX, ca. 180.000€).

2018 Postdoctoral research fellowship from the **Alexander von Humboldt Foundation** (ca. 65.000€).

2016 **Short stay travel grant** from the FPU-MECD programme from the Ministry of Education of Spain (ca. 4000€).

2014 **FPU** (Formación Profesorado Universitario) **predoctoral fellowship** from the Ministry of Education of Spain (ca. 60.000€)

2013 **AAD collaboration fellowship** from the Generalitat de Catalunya (AGAUR) for master students (ca. 2000€).

2011 **Xavier Gironés Fellowship** for undergraduate students (IQC) (ca. 1200€).

Publications (*denotes equal authorship)

During my scientific career I produced 18 scientific (14 first-authored) publications in the most prestigious international journals, including *Science*, and 1 book chapter.

Summary of research articles: *Science* (1), *Nature Catalysis* (1), *J. Am. Chem. Soc* (5), *Chem. Sci.* (3), *Inorg. Chem.* (1), *Adv. Synth. Catal.* (2), *Organometallics* (1), *Chem. Commun.* (1), *Adv. Organomet. Chem.* (1); *Nachr. Chem.* (1); *An. Quim.* (1); WILEY-VCH (book chapter, 1). ([see annex for full list of publications](#))

Top 5 publications (* denotes equal authorship):

1. Mechanism of the Aryl-F Bond-Forming Step from Bi(V) Fluorides. [Planas, O.](#); Peciukenas, V.; Leutzsch, M.; Nöthling, N.; Pantazis, D. A.; Cornella, J. *J. Am. Chem. Soc.* **2022**, *144*, 14489.
2. Fluorination of Arylboronic Esters Enabled by Bismuth Redox Catalysis. [Planas, O.](#);* Wang, F.;* Leutzsch, M.; Cornella, J. *Science* **2020**, *367*, 313.
3. Bismuth-Catalyzed Oxidative Coupling of Arylboronic Acids with Triflate and Nonaflate Salts. [Planas, O.](#); Peciukenas, V.; Cornella, J. *J. Am. Chem. Soc.* **2020**, *142*, 11382.
4. Bi(I)-Catalyzed Transfer-Hydrogenation with Ammonia-Borane. Wang, F.;* [Planas, O.](#);* Cornella, J. *J. Am. Chem. Soc.* **2019**, *141*, 4235.
5. Carboxylate-Assisted Formation of aryl-Co(III) Masked-Carbenes in Cobalt-Catalyzed C-H Functionalization with Diazo Esters. [Planas, O.](#); Roldán-Gómez, S.; Martín-Diaconescu, V.; Parella, T.; Luis, J. M.; Company, A.; Ribas, X. *J. Am. Chem. Soc.* **2017**, *139*, 14649-14655.

Teaching Experience

11/2021 – 05/2022	Lecturer – School of Physical and Chemical Sciences, QMUL Course: CHE100, Essential Skills for Chemistry (undergrad level) Course: CHE102B, Fundamental Organic Chemistry (undergrad level)
01/2018 – 02/2018	Teaching Assistant – Department of Chemistry University of Girona Course: <i>Basic laboratory techniques</i> (undergrad level)
09/2016 – 02/2017	Teaching Assistant – Department of Chemistry University of Girona Course: <i>General Chemistry</i> (undergrad level)
05/2013 – 06/2013	Teaching Fellow – Department of Chemistry, University of Girona Course: <i>Basic laboratory techniques</i> (undergrad level)

Supervision and Commissions of Trust

During my doctoral studies, I supervised master students and first year graduate students (Ms. C. Magallón and Ms. L. Capdevila) and I participated in teaching duties (*vide supra*). During my postdoctoral stay at the Max Planck Institut für Kohlenforschung I supervised two doctoral students (Mr. F. Wang and Mr. V. Peciukenas). As an independent researcher at Queen Mary University of London, I am currently supervising 1 postdoc (Ramon Areces Fellow) and 1 international PhD student. I have been entrusted as a reviewer of scientific international journals such as *J. Am. Chem. Soc.*, *Commun. Chem.*, etc. I have been invited as international expert for two PhD thesis in Spanish institutions, one at the Institut Catala d'Investigació Química (ICIQ) and one at Universitat de Girona, as well as a MSc thesis in QMUL.

Membership of Scientific Societies

Since 2017	Member (6987) of the Spanish Society of Chemistry (RSEQ).
Since 2018	Alexander von Humboldt Foundation
Since 2022	Member (720395) of the Royal Society of Chemistry.

Research Communications

The impact of my early research career is demonstrated by **my poster (5) and oral (6) communications in international conferences and invited lectures (6)** in leading institutions across the continent.

Oral Communications

- 07/2021 *High-valent Bismuth Redox Catalysis.* **EuCheMS International Organometallic Virtual Conference XXIV, EuCOMC Alcala, Spain.**
- 09/2019 *Bi(I)-Catalyzed Transfer-Hydrogenation with Ammonia-Borane.* **Hochschule-trifft-Industrie in Merck.** Darmstadt, Germany.
- 01/2018 *Cobalt-Catalyzed C-H Functionalization: Reaction Intermediates and Mechanism Elucidation.* **Hetero-elements and coordination chemistry: from concepts to applications.** Toulouse, France.
- 07/2017 *Cobalt-Catalyzed C-H Functionalization: Reaction Intermediates and Mechanism Elucidation.* **EuCheMS International Organometallic Conference XXII,** EuCOMC Amsterdam, The Netherlands.
- 09/2016 *Isolation of Key Aryl-Co(III) Intermediates in Cobalt-Catalysed C(sp²)-H Functionalisations and New Insights into Alkyne Annulation Reaction Mechanisms.* **XXXIV GEQO CONGRESS.** Girona, Spain.
- 03/2016 *Building up Molecular Complexity Using Cobalt Catalysis through C-H Activation and C-H Functionalization.* **Challenges in Organic Chemistry (ISACS19),** University of California at Irvine, Irvine, USA.

Invited Lectures

- 07/2022 *Aryl-F Reductive Elimination from Bi(V) Centers.* **Imperial College London,** London, UK.
- 06/2022 *Base Metal and Main group Catalysis for Sustainable Synthesis.* **King's College London,** London, UK.
- 02/2021 *From Base Metals to the Main Group: Catalytic platforms for unique bond-making transformations.* **IST Austria,** Vienna, Austria.
- 01/2021 *From Cobalt to Bismuth Metallacycles: Catalytic platforms for unique bond-making transformations.* **RTWH Aachen University,** Institute of Organic Chemistry, Aachen, Germany.
- 12/2020 *High-valent Bismuth Redox Catalysis.* **Synthesis Workshop Series** (Hosted by Matthew Horwitz). *Online in December 2020.*
- 03/2017 *Cobalt-catalyzed C-H Functionalization: Reaction Intermediates and Mechanism Elucidation.* **Sheffield Hallam University,** Sheffield, UK.

Languages

Spanish – Native

English – Fluent

French – Basic

Catalan – Native

German – Basic

Annex – Full list of publications (* denotes equal contribution)

- P19.** Csp²-H amination reactions mediated by metastable pseudo-O_n masked aryl-Co(III)-nitrene species. Capdevila, L.;[§] Montilla, M.;[§] Planas, O.; Brotons, A.; Salvador, P.; Martin-Diaconescu, V.; Parella, T.; Luis, J. M.; Ribas, X. *Inorg. Chem.* **2022**, ASAP (proofs phase).
- P18.** Mechanism of the Aryl-F Bond-Forming Step from Bi(V) Fluorides. Planas, O.; Peciukenas, V.; Leutzsch, M.; Nöthling, N.; Pantazis, D. A.; Cornella, J. *J. Am. Chem. Soc.* **2022**, *144*, 14489.
- P17.** Catálisis redox con bismuto. Planas, O. *An. Chem.* **2021**, *117*, 266.
- P16.** High-valent Bismuth Redox Catalysis. Planas, O.; Cornella, J. *Nachr. Chem.* **2021**, *69*, 79.
- P15.** Well-Defined Aryl-Fe^{II} Complexes in Cross-Coupling and C-H Activation Processes. Magallón, C.; Planas, O.; Roldán-Gómez, S.; Luis, J. M.; Company, A.; Ribas, X. *Organometallics* **2021**, *40*, 1195.
- P14.** Bismuth-Catalyzed Oxidative Coupling of Arylboronic Acids with Triflate and Nonaflate Salts. Planas, O.; Peciukenas, V.; Cornella, J. *J. Am. Chem. Soc.* **2020**, *142*, 11382.
- P13.** Fluorination of Arylboronic Esters Enabled by Bismuth Redox Catalysis. Planas, O.;[§] Wang, F.;[§] Leutzsch, M.; Cornella, J. *Science* **2020**, *367*, 313. (first published in ChemRxiv, DOI: 10.26434/chemrxiv.9729143.)
- P12.** Unravelling the Mechanism of Cobalt-Catalysed Remote C-H Nitration of 8-Aminoquinolinamides and Expansion of Substrate Scope Towards 1-naphthylpicolinamide. Chu, M.; Planas, O.; Company, A.; Ribas, X.; Hamilton, A.; Whiteoak, C. W. *Chem. Sci.* **2020**, *11*, 534.
- P11.** Facile Access to Chiral Non-natural Amino Acids. Planas, O.; Cornella, J. *Nat. Catal.* **2019**, *2*, 839. (News & Views).
- P10.** Aerobic C-C and C-O Bond Formation Reactions Mediated by High-Valent Nickel Species. Smith, S. M.; Planas, O.; Gómez, L.; Rath, N. P.; Ribas, X.; Mirica, L. M. *Chem. Sci.* **2019**, *10*, 10366.
- P9.** Bi(I)-Catalyzed Transfer-Hydrogenation with Ammonia-Borane. Wang, F.;[§] Planas, O.;[§] Cornella, J. *J. Am. Chem. Soc.* **2019**, *141*, 4235.
- P8.** Recent Advances in Cobalt-Catalyzed Cross-Coupling Reactions. *Non-Noble Metal Catalysis: Molecular Approaches and Reactions*. Planas, O.; Whiteoak, C. J.; Ribas, X. Ed. Moret, M.-E., Gebbink, K. WILEY-VCH, Weinheim, Germany, **2019**.
- P7.** Current Mechanistic Understanding of Cobalt-Catalyzed C-H Functionalizations. Planas, O.; Chirila, P.; Whiteoak, C. J.; Ribas, X. *Adv. Organomet. Chem.* **2018**, *69*, 209.
- P6.** Mechanistic Insights into the S_N2-type Reactivity of Aryl-Co(III) Masked-Carbenes for C-C Bond Forming Transformations. Planas, O.;[§] Roldán-Gómez, S.;[§] Martin-Diaconescu, V.; Luis, J. M.; Company, A.; Ribas, X. *Chem. Sci.* **2018**, *9*, 5736.
- P5.** Carboxylate-Assisted Formation of aryl-Co(III) Masked-Carbenes in Cobalt-Catalyzed C-H Functionalization with Diazo Esters. Planas, O.; Roldán-Gómez, S.; Martin-Diaconescu, V.; Parella, T.; Luis, J. M.; Company, A.; Ribas, X. *J. Am. Chem. Soc.* **2017**, *139*, 14649.
- P4.** Isolation of Key Aryl-Co(III) Intermediates in Cobalt-Catalysed C(sp²)-H Functionalizations and New Insights into Alkyne Annulation Reaction Mechanisms. Planas, O.; Whiteoak, C. J.; Martin-Diaconescu, V.; Gamba, I.; Parella, T.; Luis, J. M.; Company, A.; Ribas, X. *J. Am. Chem. Soc.* **2016**, *138*, 14388.
- P3.** A First Example of Cobalt-Catalyzed Remote C-H Functionalization of 8-Aminoquinolines Operating through a Single Electron Transfer Mechanism. Whiteoak, C. J.;[§] Planas, O.;[§] Company, A.; Ribas, X. *Adv. Synth. Catal.* **2016**, *358*, 1679.
- P2.** Regioselective Access to Functionalized Sultam Motifs through Cobalt-catalyzed Annulation of Aryl Sulfonamides and Alkynes. Planas, O.; Whiteoak, C. J.; Company, A.; Ribas, X. *Adv. Synth. Catal.* **2015**, *357*, 4003.
- P1.** Structural Modeling of Iron Halogenases: Synthesis and Reactivity of Halide-Iron(IV)-Oxo Compounds. Planas, O.; Clemancey, M.; Latour, J.-M.; Company, A.; Costas, M. *Chem. Commun.* **2014**, *50*, 10887.