# GIORGIO OLIVO

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## EMPLOYMENT

**01/2021-now** — **Post-doctoral fellow** at "La Sapienza", University of Rome

*Research group* — Prof. Stefano Di Stefano, Prof. Osvaldo Lanzalunga

*Work* — Design of supramolecular strategies to alter selectivity in aliphatic C-H functionalization, design of a biomimetic rebound process for C-H halogenation

**02/2016-10/2020** — **Post-doctoral fellow** at QBIS-CAT, IQCC, Universitat de Girona (2016 as "perfezionamento all'estero" fellow, 2017-2019 as a 2017 "Juan de La Cierva" fellow)

*Research group* — Prof. Miquel Costas

*Work* — Design of a recognition-driven strategy for remote, Mn-catalyzed C($sp^3$)-H oxidation

## EDUCATION

**10/2012-12/2015** — **PhD in Chemistry** at "La Sapienza", University of Rome.

*Thesis Title* — Nonheme iron complexes as catalysts for non-activated C-H oxidations

*Supervisors* — Dr. Stefano Di Stefano

**10/2014-05/2015** — **Short stay** at "Universitat de Girona", Catalunya, Spain.

*Objective* — Investigation of the oxidation mechanism of an imine-based iron catalyst.

*Research group* — Prof. Miquel Costas

**2010-2012** — **Master degree thesis in Chemistry** at "La Sapienza", University of Rome.
Graduated with full marks (110/110 cum laude, average grade 29.6/30). 2 years on 2 years required.

*Thesis Title* — Study of electronic and structural effects on aliphatic C-H oxidation by nonheme iron complexes.

*Supervisors* — Dr. S. Di Stefano, Prof. L. Mandolini

**2007-2010** — **Bachelor degree thesis in Chemistry** at "La Sapienza", University of Rome.
Graduated with full marks (110/110 cum laude, average grade 28.7/30). 3 years on 3 years required.

*Thesis Title* — Functionalization of Calix[4]arene systems

*Supervisors* — Dr. S. Di Stefano, Prof. L. Mandolini

**2002-2007** — "**Diploma di maturità classica**" (high school) with full marks *(100 /100)* at Liceo classico "Vitruvio Pollione", Formia (LT).

## PUBLICATIONS

*Bibliometric Indexes*

**Total number** of peer reviewed publications = **25**
of which **13** as **first author** (or co-first) and **5** as **co-corresponding author**

(**2** research **articles** and **5 reviews, 23** on **first quartile** journals)

Book chapters = **1**

# GIORGIO OLIVO

***h*-index** (Scopus, January 2021) = **12**

**Total number of citations** (Scopus, January 2021) = **430**

**ORCID ID:** 0000-0003-4053-7673

**Average Impact Factor = 6.33** (calculated with 2019 impact factors)

(**6.94** considering **first-author** publications, **9.64** considering **co-corresponding** author publications)

*List of publications*

1. F. Frateloreto, G. Capocasa, G. Olivo, K. A. Hady, C. Sappino, M. Di Berto Mancini, S. Levi Mortera, O. Lanzalunga, S. Di Stefano*, *RSC Adv.* **2021**, 11, 537-542
"Increasing the steric hindrance around the catalytic core of a self-assembled imine-based non-heme iron catalyst for C–H oxidation"

2. B. Ticconi, G. Capocasa, A. Cerrato, S. Di Stefano, A. Lapi, B. Marincioni, G. Olivo, O. Lanzalunga*, *Catal. Sci. Tech.* **2020**, DOI: 10.1039/D0CY01868F.
"Insight into the Chemoselective Aromatic vs Side-chain Hydroxylation of Alkylaromatics with $H_2O_2$ Catalyzed by a Non-Heme Imine Based Iron Complex"

3. L. Vicens, G. Olivo*, M. Costas*, *ACS Catal.* **2020**, *10*, 8611-8631
"Rational Design of Bioinspired Catalysts for Selective Oxidations"

4. G. Olivo*,[¶] G. Capocasa,[¶] B. Ticconi, O. Lanzalunga, S. Di Stefano*, M. Costas*, *Angew. Chem. Int. Ed.* **2020**, *59*, 12703-12708
"Predictable Selectivity in Remote C−H Oxidation of Steroids: Analysis of Substrate Binding Mode"
*Selected as a VIP paper*
[¶]*Equal contribution.*

5. G. Capocasa, M. Di Berto Mancini, F. Frateloreto, O. Lanzalunga, G. Olivo, S. Di Stefano*
*Eur. J. Org. Chem.* **2020**, *23*, 3390-3397 (
"Easy Synthesis of a Self-Assembled Imine-based Iron(II) Complex Endowed with Crown-ethers Receptors"

6. M. Cianfanelli,[¶] G. Olivo,[¶] M. Milan, R. J. M. Klein Gebbink, X. Ribas, M. Bietti,* M. Costas*, *J. Am. Chem. Soc.* **2020**, *142*, 1584-1593.
[¶]*Equal contribution.*
"Enantioselective C–H Lactonization of Unactivated Methylenes Directed by Carboxylic Acids"
*Highlighted Organic Chemistry Portal on October 26th, 2020 (https://www.organic-chemistry.org/Highlights/2020/26October.shtm)*

7. G. Capocasa, F. Sessa, F. Tavani, G. Olivo, M. Monte, S. Pascarelli, O. Lanzalunga*, S. Di Stefano*, P. D'Angelo*, *J. Am. Chem. Soc.* **2019**, *141*, 2299-2304.
"Coupled X-Ray Absorption/UV-Vis Monitoring of Fast Oxidation Reactions Involving a Non-Heme Iron Oxo Complex"
*Highlighted in the ESRF Spotlight on Science on 22/03/2019.*

*8.* G. Olivo*, G. Capocasa, O. Lanzalunga, S. Di Stefano*, M. Costas*, *Chem. Commun.* **2019**, *7*, 917-920.
"Enzyme-like Substrate-Selectivity in CH Oxidation Enabled by Recognition"

*9.* D. Vìdal, G. Olivo*, M. Costas*, *Chem. A Eur. J*., **2018**, *24*, 5042-5054.
"Controlling selectivity in aliphatic C-H oxidation via supramolecular recognition"

*10.* B. Ticconi, A. Colcerasa, S. Di Stefano, O. Lanzalunga*, A. Lapi, M. Mazzonna, G. Olivo, *RSC Adv.*, **2018**, *8*, 19144-19151.
"Oxidative functionalization of aliphatic and aromatic amino acid derivatives with $H_2O_2$ catalyzed by a nonheme imine based iron complex"

*11.* G. Olivo*, G. Farinelli, A. Barbieri, O. Lanzalunga, S. Di Stefano*, M. Costas*, *Angew. Chem. Int. Ed.*, **2017**, *56*, 16347-16351.
"Supramolecular Recognition Allows Remote, Site-Selective C−H Oxidation of Methylenic Sites in Linear Amines"

*12.* G. Capocasa[¶], G. Olivo[¶], A. Barbieri, O. Lanzalunga, S. Di Stefano, *Catal. Sci. Tech.* **2017**, *7*, 5677-5686.
"Direct hydroxylation of benzene and aromatics with $H_2O_2$ catalyzed by a self-assembled iron complex: evidence for a metal-based mechanism"

[¶]*Equal contribution.*

*Selected as a 2017 Catalysis, Science & Technology Hot Articles*

*13.* G. Olivo, A. Barbieri, V. Dantignana, F. Sessa, V. Migliorati, M. Monte, S. Pascarelli, T. Narayanan, O. Lanzalunga*, S. Di Stefano*, P. D'Angelo*, *J. Phys. Chem. Lett.*, **2017**, *8*, 2958-2963.
"Following a Chemical Reaction on the Millisecond Time Scale by Simultaneous X-ray and UV/Vis Spectroscopy"

*Highlighted in the ESRF Spotlight on Science on 25/07/2017.*

*14.* S. Albano, G. Olivo, L. Mandolini, F. Ugozzoli, S. Di Stefano*, *J. Org. Chem*., **2017**, *82*, 3820-3825.
"Unexpected Formation of an Imidazopyridine Structure as the Indirectly Templated Product of an Imine-based Dynamic Library"

*15.* G. Olivo, O. Cussò, M. Borrell, M. Costas*, *J. Biol. Inorg. Chem.*, **2017**, *22*, 425-452.
"Oxidation of Alkane and Alkene Moieties with Biologically Inspired Nonheme Iron Catalysts and Hydrogen Peroxide. From Free-Radicals to Stereoselective Transformations"

*16.* A. Barbieri, S. Di Stefano, O. Lanzalunga*, A. Lapi, M. Mazzonna, G. Olivo, *Phosphorus, Silicon and the Related Elements.* **2017**, *192*, 241-244.
"Role of Electron Transfer Processes in the Oxidation of Aryl Sulfides Catalysed by Nonheme Iron Complexes"

17. A. Barbieri, T. Del Giacco, S. Di Stefano, O. Lanzalunga*, A. Lapi, M. Mazzonna, G. Olivo, *J. Org. Chem.* **2016**, *81*, 12382-12387.
"Electron Transfer Mechanism in the Oxidation of Aryl 1-Methyl-1-phenylethyl Sulfides Promoted by Nonheme Iron(IV)-Oxo Complexes: The Rate of the Oxygen Rebound Process"

18. G. Olivo, O. Cussó, M. Costas*, *Chem. As. J.* **2016**, *11*, 3148-3158.
"Biologically Inspired C-H and C=C Oxidations with $H_2O_2$ Catalyzed by Iron Coordination Complexes"
*Highlighted as a "spotlight on our sister journals" by Angew. Chem. (ed. 3/2017).*

19. G. Olivo, S. Giosia, A. Barbieri, O. Lanzalunga, S. Di Stefano*, *Org. Biomol. Chem.* **2016,** *14*, 10630 – 10635.
"Alcohol Oxidation with $H_2O_2$ Catalyzed by a Cheap and Promptly Available Imine Based Iron Complex"

20. A. Barbieri, R. De Carlo, T. Del Giacco, S. Di Stefano, O. Lanzalunga*, A. Lapi, M. Mazzonna, G. Olivo, M. Salamone, *J. Org. Chem.*, **2016**, *81*, 2513-2520.
"Oxidation of Aryl Diphenylmethyl Sulfides Promoted by a Non-Heme Iron(IV)-Oxo Complex: Evidence for Electron Transfer-Oxygen Transfer Mechanism"

21. G. Olivo, O. Lanzalunga, S. Di Stefano*, *Advanced Synthesis & Catalysis*, **2016**, *358*, 843-863.
"Nonheme Imine-based Iron Complexes as Catalysts for Oxidative Processes"

22. G. Olivo, M. Nardi, A. Barbieri, A. Lapi, L. Gómez, O. Lanzalunga, M. Costas*, S. Di Stefano*, *Inorg. Chem.*, **2015**, *54*, 10141-10152.
"C-H bond oxidation catalyzed by an imine-based iron complex: a mechanistic insight"

23. A. Barbieri, M. De Gennaro, S. Di Stefano, O. Lanzalunga*, A. Lapi, M. Mazzonna, G. Olivo, B. Ticconi, *Chem. Commun.* **2015**, *51*, 5032-5035.
"Isotope effect profiles in the N-demethylation of *N*,*N*-dimethylanilines: a key to determine the pka of nonheme Fe(III)-OH complexes"

24. G. Olivo, G. Arancio, L. Mandolini, O. Lanzalunga, S. Di Stefano*, *Catal. Sci. Tech.* **2014**, *4*, 2900-2903.
"Hydrocarbon Oxidation Catalyzed by a Cheap Nonheme Imine-Based Iron (II) Complex"

25. G. Olivo, O. Lanzalunga, L. Mandolini, S. Di Stefano*, *J. Org. Chem.* **2013**, *58*, 11508-11512.
"Substituent Effects on the Catalytic Activity of Bipyrrolidine-Based Iron Complexes"

*Book chapters*

1. G. Olivo, O. Lanzalunga, S. Di Stefano, book chapter in *Alkane Functionalization*, edited by A. J. L. Pombeiro, published by Wiley on 2019/3/4 in Mannheim, Germany.
"Imine-based Iron and Manganese Complexes as Catalysts for Alkane Functionalization"

*Reviewing activity*

2018 *Adv. Synth. & Cat.*
2020-now *Synlett, SynOpen, Eur J.O.C., Polyhedron, Org. Biomol. Chem.*

**PARTICIPATION IN CONFERENCES**

*Invited talks*

1. **Convegno Giovani Ricercatori 2019 (Italy),** 25-26/06/2019
   *"Supramolecular control of selectivity in Mn catalysed $C_{sp}^3$-H Hydroxylation"*
2. **CNR Institute of Montelibretti (Italy),** 29/10/2015
   *"Aliphatic C-H Oxidation catalyzed by nonheme imine-based iron complexes"*

*Oral Presentations*

1. **ISOC-MMM 2019 (International School on Organometallic Chemistry Marcial Moreno Mañas)**, 12-14/06/2019, Castellò de la Plana, Spain
2. **$H_2$TrapCatBio$O_2$ Meeting,** 25-26/10/2018, Castellò de la Plana, Spain
3. **2nd TransPyrenean Meeting,** 18-19/10/2018, Tarragona, Spain
4. **CDCO 2018**, 9-13/09/2018, Milano, Italy
5. **ICCC 2018 (International Conference on Coordination Chemistry)**, Sendai, Japan
6. **International Conference on Hydrogen Atom Transfer**, 02-06/07/2017 Monteporzio Catone, Italy
7. **XXV Congresso Nazionale S.C.I. 2014**, 07-12/09/2014, Rende, Italy
8. **International Conference on Hydrogen Atom Transfer**, 22-26/06/2014 Monteporzio Catone, Italy
9. **VI Convegno Giovani Chimici**, 17-18/06/2014, Roma, Italy
10. **XI PhD-day CIRCC**, 27/03/2014, Bari, Italy
11. **X PhD-day CIRCC**, 23/04/2012, Pisa, Italy

*Chairman*

Girona Seminar 2018 (Young Investigator Symposium)

*Poster presentations*

1. **International Symposium on Macrocyclic and Supramolecular Chemistry (ISMSC) 2019**, 02-06/06/2019, Lecce, Italy
2. **Girona seminar,** 03-06/04/2018, Girona, Spain
3. **XXXIV Congress Organometallic Chemistry Group (GEQO),** 07-09/09/2016, Girona (Spain)
4. **Girona Seminars,** 17-20/04/2015, Girona (Spain)
5. **XXI EuCheMS International Conference on Organometallic Chemistry 2015**, 05-09/07/2015, Bratislava (Slovakia)
6. **Organometallic Chemistry directed towards Organic Synthesis (OMCOS 18)**, 28/06-02/07/2015, Sitges (Spain)
7. **Suprachem 2013**, 24-27/09/2013, Padova (Italy)
8. **International School of Organometallic Chemistry**, 29/08-03/09/2013, Camerino (Italy)
9. **European Symposium of Organic Chemistry**, 07-12/07/2013, Marseille (France)
10. **V Convegno Giovani Chimici**, 12-13/06/2012, Roma (Italy)

**GRANTS**

*Fellowships*

2017-2019

- "**Juan de La Cierva Post-Doc Fellowship 2017**" of 2 years, after national Spanish selection (FJCI-2016-30243)

2016
- **"Post-Doc Fellowship"** (2016, Borsa di perfezionamento all'estero) to work in Dr. M. Costas research group in Girona, Spain.

2012-2015
- **"Ministry Funded PhD Fellowship"** of 3 years (2012-2015) after national selection (first with full marks, 120/120).
- **"RSEQ-JIQ fellowship"** to participate in ICCC conference (2018)
- "**COST Grant**" to participate to ISOC conference (2013)
- **2 "University Library Scholarship"** (2010, 2011).

*Funded grants as PI*

2020
- **"Reaxys-SCI Small Research Grant"** (S-ReCHOx) of 5.000€ awarded by Elsevier and Società Chimica Italiana after national selection (3 grants awarded over 93 participants). **2020**

2014
- **"Progetto Avvio alla Ricerca"** (C.I.A.O.) of 2.000 euro (research grant designed for postdocs and PhD students), on the activity on imine-based iron complexes as oxidation catalysts. **2014**

*Funded projects as participant*
- **"Catálisis de oxidación bioinspirada mediante diseño racional de cataliadores"** (PGC2018-101737-B-100)" of 242.000 € da MICINN, Spain. PI: Dr. Miquel Costas, **2018**
- "**HIGHVALCAT** (CTQ2015-70795-P)" of 157.000 euros from MINECO, Spain. PI: Dr. Miquel Costas, **2016**
- **"Grande Progetto di Ateneo"** of 35.000 euros, from "Sapienza" University. PI:prof. Paola D'Angelo. **2015**
- Accepted **"Synchrotron Proposal"** to ESRF (Grenoble, France). **2016**
- Accepted **"Synchrotron Proposal"** to ESRF (Grenoble, France). **2015**
- Accepted **"Synchrotron Proposal"** to ESRF (Grenoble, France). **2014**

**AWARDS**
- "*Best Oral Presentation*" in ISOC-MMM conference (2019)
- *"Boehringer Ingelheim Stiftung award"* in ISMSC conference (2019)
- *"Best Oral Presentation"* in "VI Convegno Giovani" (2014)
- *"Excellent Graduate"* of Academic year 2011/2012 released by the University Dean and Fondazione Sapienza.

**TEACHING EXPERIENCE**
- Co-Lecturer of General Chemistry (to Biology students, academic year 2019-2020, Universitat de Girona, 2019/2020).
- Committee member of Master in Chemistry final examinations (Universitat de Girona, 19/07/2019 and 12/09/2020).
- Lectures on Physical Organic Chemistry course (Università La Sapienza, Roma, 2014-2015)
- Mentoring and informal supervision of master and bachelor thesis students (7 master and 4 bachelor students in the PhD, 4 PhD and 1 bachelor students in the PostDoc).

**SKILLS**

*Technical*
- Expertise in Organic and Inorganic synthesis and characterization techniques
- Expertise in Supramolecular Chemistry (Recognition processes)
- Competence in transition metal chemistry (in particular Fe, Mn, Cu, Ni, Co)
- Competence in radical chemistry (in particular Hydrogen Atom Transfer)

- Expertise in NMR spectroscopy (mono- and bi-dimensional), UV, IR, MS spectrometry and in GC e HPLC analysis.
- Basic Knowledge in EPR, r-Raman, XAS, MossBauer spectroscopy and in Cyclic Voltammetry.
- In-depth knowledge of Organic and Inorganic Chemistry (Coordination Chemistry)
- Excellent communication skills towards specialized and not-specialized audiences (oral and written)
- Teaching ability in Organic and Inorganic Chemistry (Lectures and seminars, student supervision, participation to exam committees, private classes)

*Administrative*

- Experience in the design, preparation and administration of research proposals
- Experience in the supervision of students research work
- Consolidate team working skills and to build an international research network
- Competence in the organization and management of internal group meetings (PhD, 2013-2015) and department seminars ("technique Seminar", 2014-2015, Girona Seminar 2018).
- Elected department and Faculty student delegate (2009-2012) and PhD delegate (2014-2015).
- Proposed and organized group meetings in the research group

*IT*

Competence in the use of Microsoft software, data handling *(Sigmaplot, Excel)*, molecular drawing software *(Chemdraw)*, NMR elaboration *(Topspin, Mestrenova, Win-NMR)*, Mass spectrum analysis *(Bruker Data Analysis)*.

*Languages*

ITALIAN *mother tongue*

ENGLISH *proficiency (C1)*

SPANISH *proficiency (C1)*

CATALAN *basic knowledge (A2)*

## RESEARCH INTEREST

*Post-Doc*

My post-doc work in Prof. Miquel Costas' group focuses on the use of weak interactions to control selectivity in C-H oxidations catalyzed by bioinspired Fe and Mn complexes with $H_2O_2$. Such catalysts bear supramolecular receptors (18-crown-6 ethers) to recognize protonated primary amines. Ammonium binding exposes only certain specific C-H bonds that are in a precise geometric relationship with the amine function, to the oxidizing moiety leading to selective, remote oxidation. Supramolecular recognition overrides the intrinsic reactivity pattern of the substrate and enables a geometric control over the reaction selectivity. This effect is studied to attain site-, substrate- and stereo-selective C-H (and C=C) oxidations.

*PhD*

My PhD work, under the supervision of Dr. Stefano Di Stefano, lies at the interface of Organic and Inorganic Chemistry. The PhD project, which has been proposed by myself, is aimed at the study of oxidations catalyzed by nonheme iron complexes from both a mechanistic and a synthetic perspective. A new, simple catalyst has been designed and tested in aliphatic and aromatic C-H oxidation. Mechanistic investigations have been carried out both on the new catalyst and on already reported systems.

*Short stay in Prof. Costas research group*

The mechanism of $H_2O_2$ activation and C-H oxidation by an imine-based coordinatively saturated iron complex has been investigated and elucidated.

# GIORGIO OLIVO

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| *Master Thesis* | My master thesis focused on the evaluation of substituent effects on the oxidative activity of an iron complex and on the synthesis of the corresponding pyridine-based complexes. |
| *Bachelor Internship* | My bachelor work was devoted to the study of calixarene-containing receptor systems. |
| PROFESSIONAL MEMBERSHIPS | SCI (Società Chimica Italiana) 2018-now<br>RSEQ (Real Sociedad Espa ñola de Química) 2017-now |
| REFEREES | **Prof. Miquel Costas** (Post-Doc advisor)<br>Universitat de Girona, Girona, Spain<br>**Dott. Stefano Di Stefano** (PhD supervisor)<br>Università "La Sapienza", Roma, Italy<br>**Prof. Massimo Bietti** (Committee member at the PhD exam)<br>Università "Tor Vergata", Roma, Italy |