

GIORGIO OLIVO

EMPLOYMENT

01/2020-now

Research group

Work

Post-doctoral fellow at “La Sapienza”, University of Rome.

Prof. Stefano Di Stefano

Application of supramolecular chemistry to catalysis

02/2016-10/2019

Research group

Work

Post-doctoral fellow at QBIS-CAT, IQCC, Universitat de Girona (2016 as “borsa di perfezionamento all'estero fellow, 2017-2019 as a 2017 “Juan de La Cierva” fellow)

Prof. Miquel Costas

Design of a supramolecular strategy to control selectivity in C-H oxidation

EDUCATION

10/2012-12/2015

Thesis Title

Supervisors

PhD in Chemistry at “La Sapienza”, University of Rome.

Nonheme iron complexes as catalysts for non-activated C-H oxidations

Prof. Stefano Di Stefano

10/2014-05/2015

Objective

Research group

Short stay at “Universitat de Girona”, Catalunya, Spain.

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

Prof. Miquel Costas

2010-2012

Thesis Title

Supervisors

Master degree thesis in Chemistry at “La Sapienza”, University of Rome.

Graduated with full marks (110/110 cum laude).

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

Prof. S. Di Stefano, Prof. L. Mandolini

2007-2010

Thesis Title

Supervisors

Bachelor degree thesis in Chemistry at “La Sapienza”, University of Rome.

Graduated with full marks (110/110 cum laude).

Functionalization of Calix[4]arene systems

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 = **26**

of which **14** as **first author** (or co-first) and **6** as **co-corresponding author**

(**18** research **articles** and **6** **reviews**, **23** on **first quartile** journals)

Book chapters = **1** Highlights and Previews = **1**

Conference paper = **1**

h-index (Scopus, September 13th, 2021) = **15**

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Total number of citations (Scopus, September 13th, 2021) = **575**

ORCID ID: 0000-0003-4053-7673

Average Impact Factor = 8.44

List of publications

1. G. Olivo,* G. Capocasa, D. Del Giudice, O. Lanzalunga, S. Di Stefano,* *Chem. Soc. Rev.* **2021**, *50*, 7681-7724.
“New Horizons for Catalysis Disclosed by Supramolecular Chemistry”
2. F. Fratelloreto, 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”
3. B. Ticconi, G. Capocasa, A. Cerrato, S. Di Stefano, A. Lapi, B. Marincioni, G. Olivo, O. Lanzalunga*, *Catal. Sci. Tech.* **2021**, *11*, 171-178.
“Insight into the Chemoselective Aromatic vs Side-chain Hydroxylation of Alkylaromatics with H₂O₂ Catalyzed by a Non-Heme Imine Based Iron Complex”
4. L. Vicens, G. Olivo*, M. Costas*, *ACS Catal.* **2020**, *10*, 8611-8631
“Rational Design of Bioinspired Catalysts for Selective Oxidations”
5. 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.
6. G. Capocasa, M. Di Berto Mancini, F. Fratelloreto, 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”
7. 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>)
8. 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”

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Highlighted in the ESRF Spotlight on Science on 22/03/2019.

9. 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”
10. D. Vidal, G. Olivo*, M. Costas*, *Chem. A Eur. J.*, **2018**, 24, 5042-5054.
“Controlling selectivity in aliphatic C-H oxidation via supramolecular recognition”
11. 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 H₂O₂ catalyzed by a nonheme imine based iron complex”
12. 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”
13. 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 H₂O₂ catalyzed by a self-assembled iron complex: evidence for a metal-based mechanism”
[†]Equal contribution.
Selected as a 2017 Catalysis, Science & Technology Hot Articles
14. 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.
15. 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”
16. 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”
17. 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”

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18. 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”
19. G. Olivo, O. Cussó, M. Costas*, *Chem. As. J.* **2016**, *11*, 3148-3158.
“Biologically Inspired C-H and C=C Oxidations with H₂O₂ Catalyzed by Iron Coordination Complexes”
Highlighted as a “spotlight on our sister journals” by Angew. Chem. (ed. 3/2017).
20. G. Olivo, S. Giosia, A. Barbieri, O. Lanzalunga, S. Di Stefano*, *Org. Biomol. Chem.* **2016**, *14*, 10630 – 10635.
“Alcohol Oxidation with H₂O₂ Catalyzed by a Cheap and Promptly Available Imine Based Iron Complex”
21. 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”
22. G. Olivo, O. Lanzalunga, S. Di Stefano*, *Advanced Synthesis & Catalysis*, **2016**, *358*, 843-863.
“Nonheme Imine-based Iron Complexes as Catalysts for Oxidative Processes”
23. 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”
24. 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”
25. 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”
26. 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”
- Highlight and previews* G. Olivo,* M. Bietti,* *Chem* **2021**,
“Aliphatic C-H Methylation Enabled by Hydrogen Atom Transfer”

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<i>Book chapters</i>	<p>G. Olivo, O. Lanzalunga, S. Di Stefano, in <i>Alkane Functionalization</i>, 2019, 231-249, edited by A. J. L. Pombeiro, published by Wiley, on 2019/3/4 in Mannheim, Germany.</p> <p>“Imine-based Iron and Manganese Complexes as Catalysts for Alkane Functionalization”</p>
<i>Conference papers</i>	<p>F. Tavani*, A. Martini, F. Sessa, G. Capocasa, G. Olivo, O. Lanzalunga, S. Di Stefano, P. D’Angelo*, <i>Springer Proceedings in Physics</i>, 2021, 220, 141-154, from “Meeting of the Italian Synchrotron Radiation Society, SILS 2019, Camerino, September 2019, 9th-11th”.</p> <p>“Insights into the Structure of Reaction Intermediates Through Coupled X-ray Absorption/UV-Vis Spectroscopy”</p>
<i>Reviewing activity</i>	<p><i>Adv. Synth. & Cat.</i>, <i>Synlett</i>, <i>SynOpen</i>, <i>Eur J.O.C.</i>, <i>Polyhedron</i>, <i>As. J. Org. Chem.</i>, <i>Inorg. Chim. Acta</i></p>
PARTICIPATION IN CONFERENCES	
<i>Invited talks</i>	<ol style="list-style-type: none">Convegno Giovani Ricercatori 2019 (Italy), 25-26/06/2019 “Supramolecular control of selectivity in Mn catalysed C_{sp}³-H Hydroxylation”CNR Institute of Montelibretti (Italy), 29/10/2015 “Aliphatic C-H Oxidation catalyzed by nonheme imine-based iron complexes”
<i>Oral Presentations</i>	<ol style="list-style-type: none">XXVII Congresso Nazionale S.C.I. 2021, 14-23/09/2021, Milano, ItalyISOC-MMM 2019 (International School on Organometallic Chemistry Marcial Moreno Mañas), 12-14/06/2019, Castellò de la Plana, SpainH₂TrapCatBioO₂ Meeting, 25-26/10/2018, Castellò de la Plana, Spain2nd TransPyrenean Meeting, 18-19/10/2018, Tarragona, SpainCDCO 2018, 9-13/09/2018, Milano, ItalyICCC 2018 (International Conference on Coordination Chemistry), Sendai, JapanInternational Conference on Hydrogen Atom Transfer, 02-06/07/2017 Monteporzio Catone, ItalyXXV Congresso Nazionale S.C.I. 2014, 07-12/09/2014, Rende, ItalyInternational Conference on Hydrogen Atom Transfer, 22-26/06/2014 Monteporzio Catone, ItalyVI Convegno Giovani Chimici, 17-18/06/2014, Roma, ItalyXI PhD-day CIRCC, 27/03/2014, Bari, ItalyX PhD-day CIRCC, 23/04/2012, Pisa, Italy
<i>Chairman</i>	<p>Girona Seminar 2018 (Young Investigator Symposium)</p>
<i>Poster presentations</i>	<ol style="list-style-type: none">International Symposium on Macrocyclic and Supramolecular Chemistry (ISMCS) 2019, 02-06/06/2019, Lecce, ItalyGirona seminar, 03-06/04/2018, Girona, SpainXXXIV Congress Organometallic Chemistry Group (GEQO), 07-09/09/2016, Girona (Spain)Girona Seminars, 17-20/04/2015, Girona (Spain)XXI EuCheMS International Conference on Organometallic Chemistry 2015, 05-09/07/2015, Bratislava (Slovakia)Organometallic Chemistry directed towards Organic Synthesis (OMCOS 18), 28/06-02/07/2015, Sitges (Spain)Suprachem 2013, 24-27/09/2013, Padova (Italy)

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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 ICCS 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

- **“Enantioselective C-H Oxidation Guided by Rational Catalyst Design”** (PGC2018-101737-B-100)” of 1.500.000 € da ERC Advanced Grant, Spain. PI: Dr. Miquel Costas, **2020**
- **“Catálisis de oxidación bioinspirada mediante diseño racional de catalizadores”** (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

- **“Reaxys-SCI Small Research Grant”** (2019)
- **“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.

GIORGIO OLIVO

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).

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 H₂O₂. 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 H₂O₂ activation and C-H oxidation by an imine-based coordinatively saturated iron complex has been investigated and elucidated.

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
RSEQ (Real Sociedad Española de Química) 2017-now