

# CURRICULUM VITAE

## Personal Information

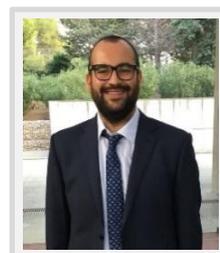
**Giacomo Filippini**

Date of birth: **23 July 1989, Fossombrone (PU), Italy.**

Current Position (October 2023-present): **Assistant Professor** (Ricercatore a tempo determinato di tipo B - RTDB) at **Università degli Studi di Trieste**, Trieste (Italy).

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Google Scholar: [\[here\]](#) - Orcid ID: 0000-0002-9694-3163, Link: [\[here\]](#).



## Areas of Expertise

**Organic Chemistry • Photochemistry • Asymmetric Catalysis • Organocatalysis • Radical Chemistry • Materials Science • Flow Chemistry**

## Research Overview

Our research activity aims at designing and developing novel catalytic organic transformations which address unsolved problems in synthetic chemistry. The final goal is therefore the production of effective, inexpensive and safe catalytic systems that will find widespread use in modern organic synthesis.

**1. Photocatalysis with Aromatic Compounds:** Recently, aromatic compounds have emerged as a reliable class of metal-free photoredox catalysts. Indeed, the great structural variety of these compounds combined with the easy fine-tuning of their electronic properties has unlocked new possibilities for the generation of reactive intermediates under mild operative conditions.

**2. Carbon Dots as Nano-Organocatalysts:** Carbon nanodots (CDs) are photo-active carbon-based nanoparticles with sizes below 10 nm. Generally, CDs consist of carbon cores that are surrounded by shells containing numerous polar groups such as carboxylic acids, alcohols, and amines. Our research is focused on the study of CDs synthesis, characterization and modification for their use as (photo)catalysts in organic chemistry.

**3. Catalysis Based on 2D-Materials:** Metal-free 2D nanomaterials possess high appeal due to their improved cost-effectiveness and lower toxicity with respect to many inorganic structures. Furthermore, the outstanding electronic characteristics of some metal-free 2D semiconductors have projected them into the world of organic synthesis, where they can function as catalysts to drive the sustainable synthesis of high-value organic molecules.

## Main Professional Experiences

• October 2023-present: **Assistant Professor** (Ricercatore a tempo determinato di tipo B - RTDB) at **Università degli Studi di Trieste**, Trieste (Italy). Web site: [\[here\]](#).

• April 2021-September 2023: **Research Fellow** (Ricercatore a tempo determinato di tipo A - RTDA) at **Università degli Studi di Trieste**, Trieste (Italy). This position was framed within the European research project ERC-EDOTS-885323-20.

Supervisor: Professor Maurizio Prato. Web site: [\[here\]](#).

● November 2017-March 2021: **Postdoctoral Researcher** (European Research Project: PRATO-GRAPHENECORE2-H2020-785219) at CENMAT (Center of Excellence for Nanostructured Materials) of the **Università degli Studi di Trieste**, Trieste (Italy).

Supervisor: Professor Maurizio Prato. Web site: [\[here\]](#).

- *Acquired knowledge*: Advanced formation in materials science, organic synthesis, photocatalysis and nano-organocatalysis.

- *Research training*: During the period spent in the research laboratory of Professor Maurizio Prato, he worked on the development of novel catalytic organic transformations. In particular, he was involved in the design, production and characterization of new carbon-based nano-organocatalytic systems, namely carbon nitrides (see *ACS Nano*, **2021**, *15*, 3621-3630) and carbon dots (see *ACS Catalysis*, **2020**, *10*, 8090-8105). Within the Prato's group, he had the opportunity to learn how to prepare, purify and characterize these nitrogen-containing nanomaterials. In particular, these materials have been efficiently used to drive relevant organic reactions, including enantioselective transformations, under mild operative conditions (see *Sci. Adv.*, **2020**, *6*, eabc9923, *Chem*, **2020**, *6*, 3022-3037 and *ChemSusChem*, **2023**, *16*, e202202399).

## Education

● November 2013-October 2017: **Doctorate in Chemistry**, graduated *cum laude*.

**Institute of Chemical Research of Catalonia (ICIQ)**, Tarragona (Spain).

Supervisor: Professor Paolo Melchiorre. Web site: [\[here\]](#).

- *Defence Date*: 17 October 2017.

- *Graduation Date*: 20 November 2018 (2017-2018 academic year).

- *Acquired knowledge*: Advanced formation in organic chemistry, organocatalysis and photochemistry.

- *Research training*: During his doctoral studies in the laboratory of Professor Paolo Melchiorre, he had the opportunity to further expand his knowledge in organic chemistry. The main scientific objective of his doctoral research was to employ and combine two powerful fields of molecule activation, photochemistry and organocatalysis. Initially, he focused on the development of a metal-free photochemical strategy for the direct aromatic perfluoroalkylation of substituted phenols. In the second part of his PhD work, he was involved in the development of a photochemical enantioselective enamine mediated  $\alpha$ -alkylation of aldehydes with  $\alpha$ -iodo sulfones. In both transformations, *in situ* formed intermediates triggered the formation, after light absorption, of reactive electron-poor radicals under mild conditions, and without the need of external photocatalysts. The obtained scientific results were published (see *Tetrahedron*, **2015**, *71*, 4535-4542 and *Angew. Chem. Int. Ed.*, **2017**, *56*, 4447-4451).



● February 2015-June 2015: **Visiting Doctorate Student**.

**Institute of Chemistry-University of Graz** (Austria).

Supervisor: Professor Oliver Kappe. Web site: [\[here\]](#).

- *Acquired knowledge*: Base formation of flow-chemistry.

- *Research training*: During the four month stay in the laboratory of Professor Oliver Kappe, under the supervision of Professor David Cantillo, he was involved in the development of a photo-organocatalytic transformation under flow conditions. This collaboration provided him the possibility to learn a powerful synthetic methodology - flow chemistry - that has found many applications also in industrial processes.



- October 2011-October 2013: **Master Degree in Industrial Chemistry**, graduated with honors (110 *cum laude*). Dipartimento di Chimica Industriale “Toso Montanari” - **Università di Bologna** (Italy).

Supervisor: Professor Paolo Righi. Web site: [\[here\]](#).

- *Graduation Date*: 18 October 2013 (2012-2013 academic year).

- *Acquired knowledge*: Advanced formation in industrial chemistry.

- *Research training*: During the six month stay in the laboratory of Professor Paolo Righi, under the supervision of Professor Giorgio Bencivenni, he studied the reactivity of  $\alpha,\beta$ -unsaturated ketones using aminocatalytic strategies. Specifically, an atroposelective Friedel-Crafts-type reaction between properly functionalized inden-1-ones and 2-naphthols was developed. The obtained scientific results were published (see *Org. Lett.*, **2017**, *19*, 6692-6695).



- October 2008-October 2011: **Bachelor Degree in Industrial Chemistry**, graduated with honors (110 *cum laude*). Facoltà di Chimica Industriale - **Università di Bologna** (Italy).

Supervisor: Professor Alfredo Ricci. Web site: [\[here\]](#).

- *Graduation Date*: 14 October 2011 (2010-2011 academic year).

- *Acquired knowledge*: Base formation of chemistry, in particular organic chemistry and materials science.

- *Research training*: During the period spent in the research laboratory of Professor Alfredo Ricci, under the supervision of Professor Luca Bernardi, he was involved in the development of the first example of an organocatalytic asymmetric Wittig reaction. The obtained scientific results were published (see *Synlett*, **2011**, *18*, 2745-2749).



- September 2003-July 2008: **Diploma**, Mark: 100/100, **ITIS (E. Mattei)** of Urbino (Italy).

- *Acquired knowledge*: Base formation of chemistry. Web site: [\[here\]](#).

### Awards and Fellowships

**2011-2013**: **Merit Scholarship** “Toso Montanari”, Università di Bologna (Italy). This fellowship is granted to the student with the best marks.

**2014**: “**XXIV Rotary Award Guido Paolucci**” as the best student of the entire School of Sciences at the Università di Bologna in the school year 2012-2013, Bologna (Italy).

**2014-2017**: **Merit Scholarship** “Severo Ochoa Excellence Accreditation 2014-2018” (Spain).

**2016**: Awarded as one of the **Best Speaker** at “3rd US-Spain Symposium on Asymmetric Catalysis and Chemical Synthesis”, Bilbao (Spain).

**2022**: Selected as “**Young Researcher to Watch**” by the international journal EurJOC.

**2022**: **Best Talk** award at “E-Wispoc”, Ischia (Italy).

**2023**: Selected as Member of the **European Cultural Institute** “Accademia Marchigiana di Scienze, Lettere ed Arti”.

**2024**: Selected as “**2024 Nanoscale Emerging Investigator**” by the international journal Nanoscale.

**2024**: Recipient of the “**Giacomo Ciamician Medal**” of the Italian Chemical Society.

**2024**: **National Scientific Habilitation** to Associate Professorship of Organic Chemistry.

**2025**: Selected as member of the **Editorial Advisory Board** of *Chemistry-Methods*.

**2025**: **National Scientific Habilitation** to Full Professorship of Organic Chemistry.

**2026:** Selected as “*Thieme Journals Awardee 2026*” by the international journals *Synthesis*, *Synlett*, *Synfacts*, *SynOpen*, and *Sustainability & Circularity NOW*.

## Publications in International Journals

**Giacomo Filippini** has authored **1 book chapter**, **1 editorial** and **46 articles** - 31 of which (67%) as corresponding author (\*) - in international journals with a high impact factor: e.g., **1 × Chem**; **4 × Angewandte Chemie International Edition**; **4 × ACS Catalysis**; **1 × Science Advances**; **2 × ACS Nano**; **1 × Small**; **1 × Advanced Science**; **1 Chemical Science**.

• **H factor = 25** - His papers have attracted a total of 1605 citations (source: Scopus as of February 5, 2026).

1. L. Gramigna, S. Duce, **G. Filippini**, M. Fochi, M. C. Franchini, L. Bernardi\*, “Organocatalytic Asymmetric Wittig Reactions: Generation of Enantioenriched Axially Chiral Olefins Breaking a Symmetry Plane”, *Synlett*, **2011**, *18*, 2745-2749. Link: [\[here\]](#). **\*Highlighted in ChemInform.**
2. **G. Filippini**, M. Nappi, P. Melchiorre\*, “Photochemical Direct Perfluoroalkylation of Phenols”, *Tetrahedron*, **2015**, *71*, 4535-4542. Link: [\[here\]](#). **\*Highlighted in ChemInform.**
3. **G. Filippini**, M. Silvi, P. Melchiorre\*, “Enantioselective Formal  $\alpha$ -Methylation and  $\alpha$ -Benzoylation of Aldehydes by Means of Photo-Organocatalysis”, *Angew. Chem. Int. Ed.*, **2017**, *56*, 4447-4451. Link: [\[here\]](#). **\*Highlighted in Synfacts.**
4. N. Di Iorio, **G. Filippini**, A. Mazzanti, P. Righi, G. Bencivenni\*, “Controlling the C(sp<sup>3</sup>)-C(sp<sup>2</sup>) Axial Conformation in the Enantioselective Friedel-Crafts-Type Alkylation of  $\beta$ -Naphthols with Inden-1-ones”, *Org. Lett.*, **2017**, *19*, 6692-6695. Link: [\[here\]](#).
5. C. Rosso, **G. Filippini**\*, P.G. Cozzi, A. Gualandi, M. Prato\*, “Highly Performing Iodoperfluoroalkylation of Alkenes Triggered by the Photochemical Activity of Perylene Diimides”, *ChemPhotoChem*, **2019**, *3*, 193-197. Link: [\[here\]](#). **\*Among the top 10% most downloaded papers January 2018 - December 2019.**
6. C. Rosso, J. D. Williams, **G. Filippini**, M. Prato, C. O. Kappe\*, “Visible-Light-Mediated Iodoperfluoroalkylation of Alkenes in Flow and Its Application to the Synthesis of a Key Fulvestrant Intermediate”, *Org. Lett.*, **2019**, *21*, 5341-5345. Link: [\[here\]](#). **\*Highlighted in Synfacts.**
7. C. Rosso, **G. Filippini**\*, M. Prato\*, “Use of Nitrogen-Doped Carbon Nanodots for the Photocatalytic Fluoroalkylation of Organic Compounds”, *Chem. Eur. J.*, **2019**, *25*, 16032-16036. Link: [\[here\]](#). **\*Selected as Hot Paper \*\*Selected as Cover Picture.**
8. C. Rosso, **G. Filippini**\*, M. Prato\*, “Carbon Dots as Nano-Organocatalysts for Synthetic Applications”, *ACS Catalysis*, **2020**, *10*, 8090-8105. Link: [\[here\]](#).
9. **G. Filippini**\*, F. Amato, C. Rosso, G. Ragazzon\*, A. Vega-Peñaloza, X. Companyó\*, L. Dell’Amico, M. Bonchio, M. Prato\*, “Mapping the Surface Groups of Amine-Rich Carbon Dots Enables Covalent Catalysis in Aqueous Media”, *Chem*, **2020**, *6*, 3022-3037. Link:

[\[here\]](#). **\*Selected as a finalist of “Premio Primo Levi 2020” of the Italian Chemical Society.**

10. M. Garrido, L. Gualandi, S. Di Noja, **G. Filippini**, S. Bosi, M. Prato\*, “Synthesis and Applications of Amino-Functionalized Carbon Nanomaterials”, *Chem. Commun.*, **2020**, 56, 12698-12716. Link: [\[here\]](#).

11. C. K. Hui, A. Tomilov, C. Garcia, X. S. Jiang, D. M. Fash, O. M. Khmour, C. Rosso, **G. Filippini**, M. Prato, J. Graham, S. Hecht, P. Havel, G. Cortopassi\*, “Novel idebenone analogs block Shc’s access to insulin receptor to improve insulin sensitivity”, *Biomedicine&Pharmacotherapy*, **2020**, 132, 110823-110833. Link: [\[here\]](#).

12. **G. Filippini**, F. Longobardo, L. Forster, A. Criado, G. Di Carmine, L. Nasi, C. D’Agostino, M. Melchionna\*, P. Fornasiero\*, M. Prato\*, “Light-Driven, Heterogeneous Organocatalysts for C-C-Bond Formation Towards Valuable Perfluoroalkylated Intermediates”, *Sci. Adv.*, **2020**, 6, eabc9923. Link: [\[here\]](#).

13. C. Rosso, **G. Filippini**, M. Prato\*, “Use of Perylene Diimides in Synthetic Photochemistry”, *Eur. J. Org. Chem.*, **2021**, 1193-1200. Link: [\[here\]](#). **\*Selected as Very Important Paper \*\*Selected as Cover Picture.**

14. C. Rosso, **G. Filippini**, A. Criado, M. Melchionna\*, P. Fornasiero, M. Prato\*, “Metal-Free Photocatalysis: Two-Dimensional Nanomaterial Connection toward Advanced Organic Synthesis”, *ACS Nano*, **2021**, 15, 3621-3630. Link: [\[here\]](#).

15. B. Bartolomei, G. Gentile, C. Rosso, **G. Filippini\***, M. Prato\*, “Turning the Light on Phenols: New Opportunities in Organic Synthesis”, *Chem. Eur. J.*, **2021**, 27, 16062-16070. Link: [\[here\]](#). **\*Selected as Review of the Week \*\*Selected as Frontispiece.**

16. F. Longobardo, G. Gentile, A. Criado, A. Actis, S. Colussi, V. Dal Santo, M. Chiesa, **G. Filippini\***, P. Fornasiero, M. Prato, M. Melchionna\*, “Tailored amorphization of graphitic carbon nitride triggers superior photocatalytic C-C coupling towards the synthesis of perfluoroalkyl derivatives”, *Mater. Chem. Front.*, **2021**, 5, 7267-7275. Link: [\[here\]](#).

17. G. Gentile, C. Rosso, A. Criado, V. Gombac, **G. Filippini\***, M. Melchionna\*, P. Fornasiero\*, M. Prato\*, “New Insights into the Exploitation of Oxidized Carbon Nitrides as Heterogeneous Base Catalysts”, *Inorganica Chimica Acta*, **2022**, 531, 120732-120738. Link: [\[here\]](#).

18. C. Rosso, S. Cuadros, G. Barison, P. Costa, M. Kurbasic, M. Bonchio, M. Prato, L. Dell’Amico\*, **G. Filippini\***, “Unveiling the Synthetic Potential of Substituted Phenols as Fully Recyclable Organophotoredox Catalysts for the Iodosulfonylation of Olefins”, *ACS Catalysis*, **2022**, 12, 4290-4295. Link: [\[here\]](#). **\*Highlighted in Organic Chemistry Portal.**

19. S. Cuadros, C. Rosso, G. Barison, P. Costa, M. Kurbasic, M. Bonchio, M. Prato, **G. Filippini\***, L. Dell’Amico\*, “The Photochemical Activity of a Halogen-Bonded Complex Enables the Microfluidic Light-Driven Alkylation of Phenols”, *Org. Lett.*, **2022**, 24, 2961-2966. Link: [\[here\]](#). **\*Among the most read paper in May 2022.**

20. A. Da Lama, B. Bartolomei, C. Rosso, **G. Filippini\***, M. Montserrat Martínez\*, Luis A. Sarandeses, M. Prato\*, “New Insights into the Exploitation of BODIPY Derivatives as Organic Photocatalysts”, *Eur. J. Org. Chem.*, **2022**, e202200622. Link: [\[here\]](#). **\*Among the most downloaded articles during its first 12 months of publication.**
21. M. Marchi, G. Gentile, C. Rosso, M. Melchionna, P. Fornasiero\*, **G. Filippini\***, M. Prato\*, “The Nickel Age in Synthetic Dual Photocatalysis: A Bright Trip Toward Materials Science”, *ChemSusChem*, **2022**, *15*, e202201094. Link: [\[here\]](#).
22. V. Corti, B. Bartolomei, M. Mamone, G. Gentile, M. Prato\*, **G. Filippini\***, “Amine-Rich Carbon Dots as Novel Nano-Aminocatalytic Platforms in Organic Synthesis”, *Eur. J. Org. Chem.*, **2022**, e202200879. Link: [\[here\]](#). **\*Among the most downloaded articles during its first 12 months of publication. \*\*This article is part of the themed collection: #NextGenOrgChem” Special Collection.**
23. E. Raciti, S. M. Gali, M. Melchionna, **G. Filippini**, A. Actis, M. Chiesa, M. Bevilacqua, P. Fornasiero, M. Prato, D. Beljonne\*, R. Lazzaroni\*, “Radical defects modulate the photocatalytic response in 2D-graphitic carbon nitride” *Chem. Sci.*, **2022**, *13*, 9927-9939. Link: [\[here\]](#). **\*Selected as Edge Article.**
24. A. Actis, M. Melchionna, **G. Filippini**, P. Fornasiero, M. Prato, E. Salvadori\*, M. Chiesa, “Morphology and Light-Dependent Spatial Distribution of Spin Defects in Carbon Nitride” , *Angew. Chem. Int. Ed.*, **2022**, e202210640. Link: [\[here\]](#).
25. G. Gentile, M. Marchi, M. Melchionna\*, P. Fornasiero, M. Prato, **G. Filippini\***, “Use of Carbon Nitrides as Photoactive Supports in Single-Atom Heterogeneous Catalysis for Synthetic Purposes”, *Eur. J. Org. Chem.*, **2022**, e202200944. Link: [\[here\]](#).
26. G. Gentile, M. Mamone, C. Rosso, F. Amato, C. Lanfrit, **G. Filippini\***, M. Prato\*, “Tailoring the Chemical Structure of Nitrogen-Doped Carbon Dots for Nano-Aminocatalysis in Aqueous Media”, *ChemSusChem*, **2023**, *16*, e202202399. Link: [\[here\]](#).
27. V. Corti, J. Dosso, M. Prato, **G. Filippini\***, “Photo-Induced Cascade Reactions of 2-Allylphenol Derivatives Towards the Production of 2,3-Dihydrobenzofurans”, *J. Org. Chem.*, **2023**, *88*, 6008-6016. Link: [\[here\]](#).
28. M. Mamone, G. Gentile, J. Dosso, M. Prato, **G. Filippini\***, “Direct C2–H alkylation of indoles driven by the photochemical activity of halogen-bonded complexes”, *Beilstein J. Org. Chem.* **2023**, *19*, 575-581. Link: [\[here\]](#).
29. **G. Filippini\***, J. Dosso\*, M. Prato\*, “Phenols as Novel Photocatalytic Platforms for Organic Synthesis”, *Helv. Chim. Acta* **2023**, *106*, e20230005. Link: [\[here\]](#).
30. M. Marchi, E. Raciti, S. M. Gali, F. Piccirilli, H. Vondracek, A. Actis, E. Salvadori, C. Rosso, A. Criado, C. D’Agostino, L. Forster, D. Lee, A. C. Foucher, R. K. Rai, D. Beljonne, E. A. Stach, M. Chiesa, R. Lazzaroni, **G. Filippini\***, M. Prato, M. Melchionna\*, P.

Fornasiero\*, “Carbon Vacancies Steer the Activity in Dual Ni Carbon Nitride Photocatalysis”, *Adv. Sci.* **2023**, *10*, 2303781. Link: [\[here\]](#).

**31.** M. Sbacchi, M. Mamone, L. Morbiato, P. Gobbo\*, **G. Filippini\***, M. Prato\*, “Shining Light on Carbon Dots: New Opportunities in Photocatalysis”, *ChemCatChem* **2023**, e202300667. Link: [\[here\]](#). **\*Among the top 10 most-cited papers published by the journal in 2023. \*\*Top 10% of most-viewed papers published by the journal in 2023. \*\*\*Selected as a Readers' Choice among the most popular article in the period 2023-2025.**

**32.** G. Sportelli, G. Grando, M. Bevilacqua, **G. Filippini\***, M. Melchionna\*, P. Fornasiero\*, “Graphitic Carbon Nitride as Photocatalyst for the Direct Formylation of Anilines”, *Chem. Eur. J.*, **2023**, e202301718. Link: [\[here\]](#).

**33.** G. Gentile, M. Morant-Giner, L. Cardo, M. Melchionna, P. Fornasiero, M. Prato, **G. Filippini\***, “DoE-Assisted Development of a 2H-MoS<sub>2</sub>-Catalyzed Approach for the Production of Indole Derivatives”, *ChemSusChem*, **2023**, e202300831. Link: [\[here\]](#).

**34.** A. Actis, M. Melchionna, **G. Filippini**, P. Fornasiero, M. Prato, M. Chiesa, E. Salvadori\*, “Singlet-triplet energy inversion in carbon nitride photocatalysts”, *Angew. Chem. Int. Ed.*, **2023**, e202313540. Link: [\[here\]](#).

**35.** G. Grando, G. Sportelli, **G. Filippini\***, M. Melchionna\*, P. Fornasiero\*, “Graphitic Carbon Nitride Meets Molecular Oxygen: New Sustainable Photocatalytic Ways for the Oxidation of Organic Molecules”, *Nano Trends*, **2023**, *4*, 100028. Link: [\[here\]](#).

**36.** G. Gentile, B. Bartolomei, J. Dosso\*, N. Demitri **G. Filippini\***, M. Prato\*, “Synthesis of a Novel Tetra-Phenol  $\pi$ -Extended Phenazine and its Application as Organo-Photocatalyst”, *Chem. Commun.*, **2024**, *60*, 602-605. Link: [\[here\]](#).

**37.** F. Mancuso, P. Fornasiero, M. Prato, M. Melchionna\*, F. Franco\*, **G. Filippini\***, “Nanostructured Electrocatalysts for Organic Synthetic Transformations”, *Nanoscale*, **2024**, *16*, 5926 - 5940. Link: [\[here\]](#). **\*Part of “Nanoscale 2024 Emerging Investigators”.**

**38.** G. Sportelli, M. Marchi, P. Fornasiero, **G. Filippini\***, F. Franco\*, M. Melchionna\*, “Photoelectrocatalysis for Hydrogen Evolution Ventures into the World of Organic Synthesis”, *Global Challenges*, **2024**, 2400012. Link: [\[here\]](#).

**39.** A. Carioscia, E. Cocco, M. E. Casacchia, G. Giuseppe, M. Mamone, G. Giorgianni, E. Incerto, M. Prato\*, F. Pesciaioli\*, **G. Filippini\***, A. Carlone\*, “Nitrogen-Rich Carbon Dots as Effective Catalysts in the 1,4-Reduction of  $\alpha,\beta$ -Unsaturated Aldehydes via Ion pair Asymmetric Nano-Organocatalysis”, *ACS Catalysis*, **2024**, *14*, 13429–13438. Link: [\[here\]](#). **\*Highlighted in Synfacts.**

**40.** M. Morant-Giner\*, G. Gentile, M. Prato, **G. Filippini\***, “Molybdenum Disulfide-Based Catalysts in Organic Synthesis: State of Art, Open Issues and Future Perspectives”, *Small*, **2024**, 2406697. Link: [\[here\]](#).

41. L. Morbiato, L. Cardo, E. Sturabotti, P. Gobbo\*, **G. Filippini\***, M. Prato\*, "Structure Matters: Tailored Graphitization of Carbon Dots Enhances Photocatalytic Performance", *ACS Nano*, **2025**, *19*, 4887–4900. Link: [\[here\]](#).

42. M. Mamone, G. Gentile, M. Prato\*, **G. Filippini\***, "Phenol-Rich Carbon Dots as Metal-Free Nano-Photocatalysts for [3+2] Cycloaddition Reactions", *ChemSusChem*, **2025**, e202500521. Link: [\[here\]](#).

43. C. Gioia\*, V. Corti, A. Filippini, D. Zanichelli, F. Palazzi, P. A. Solovyev, M. Prato, **G. Filippini\***, "Valorization of Refined Lignin Fractions as Green Promoters in Photochemical Atom Transfer Radical Addition Reactions", *ACS Sustain. Chem. Eng.*, **2025**, *13*, 12300–12310. Link: [\[here\]](#).

44. E. Giuliani, M. Sbacchi, S. Agostini, **G. Filippini**, B. Bartolomei\*, P. Gobbo\*, M. Prato\*, "Molecular Insight into the Formation and Functionalization of Carbon Nanodots: From Precursor Intermediates to Surface Chemistry Quantification", *Angew. Chem. Int. Ed.*, **2025**, e202515073. Link: [\[here\]](#). **\*Selected as Very Important Paper.**

45. G. Grando, G. Sportelli, G. Castellani, **G. Filippini**, M. Prato, M. Melchionna\*, P. Fornasiero\*, "Towards Reliable and Reproducible Research in Organic Photocatalysis by Carbon Nitride", *ACS Catalysis*, **2025**, *15*, 16792–16809. Link: [\[here\]](#). **\*Selected as Cover Picture.**

46. M. Manni, **G. Filippini\***, "Development of Novel Catalytic and Photocatalytic Reactions Towards the Production of Valuable Organic Molecules", *Synlett*, **2025**, DOI: 10.1055/a-2764-1035. Link: [\[here\]](#). **\*Part of the special issue "16<sup>th</sup> EuChemS Organic Division Young Investigator Workshop".**

#### Preprint and Submitted Articles:

47. E. Cocco, A. Carioscia, F. Pesciaoli, M. Prato, **G. Filippini**, M. Aschi\*, A. Carlone\*, "A Subtle Twist: Hantzsch Ester-Controlled Enantiodivergence Driven by Weak Non-Covalent Interactions", *ChemRxiv*. **2025**, doi:10.26434/chemrxiv-2025-9zww9. Link: [\[here\]](#).

48. L. Morbiato, M. Sbacchi, J. Dosso, P. Pengo, P. Gobbo\*, **G. Filippini\***, M. Prato\*, "Going Deep into the Surface Chemistry of Carbon Dot: Influence of Functional Groups on the Redox Abilities", *Submitted article*.

49. G. Colonnello, K. Maver, A. Actis, G. Grando, **G. Filippini**, T. Montini, M. Melchionna, P. Fornasiero, L. Nasi, I. Arčon, L. Donà, B. Civalieri, E. Salvadori, M. Chiesa\*, "On the Structure and Redox Behaviour of Ni and Cu Single Atoms Supported on Carbon Nitride", *Submitted article*.

#### **Editorials**

1. **G. Filippini**, "Nuovi Approcci Catalitici in Sintesi Organica", *La Chimica & L'Industria*, **2025**, Anno IX, N°1, 70-72. Link: [\[here\]](#).

#### **Books & Chapters**

1. **G. Filippini**, P. Pengo, S. Bosi, G. Ragazzon, L. Pasquato, M. Prato, Chapter 8 “Engineering Functional Nanomaterials through the Amino Group” in ***Methodologies in Amine Synthesis: Challenges and Applications***, Editors: Alfredo Ricci and Luca Bernardi, Wiley-VCH, **2021**, 285-340. Link: [\[here\]](#).

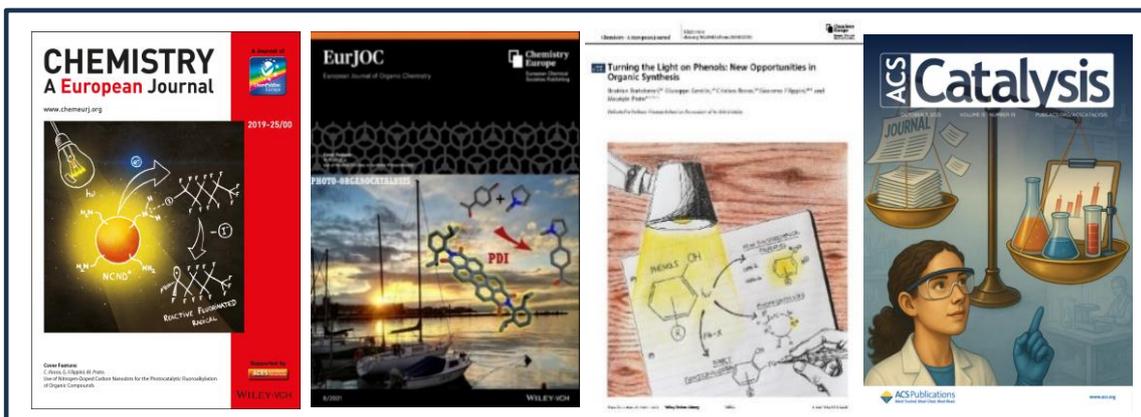
## Journal Covers & Frontispieces

1. **Cover Picture**: “Use of Nitrogen-Doped Carbon Nanodots for the Photocatalytic Fluoroalkylation of Organic Compounds” - *Chem. Eur. J.*, **2019**, 25, 16032-16036. Link: [\[here\]](#).

2. **Cover Picture**: “Use of Perylene Diimides in Synthetic Photochemistry” - *Eur. J. Org. Chem.*, **2021**, 1193-1200. Link: [\[here\]](#).

3. **Frontispiece**: “Turning the Light on Phenols: New Opportunities in Organic Synthesis” - *Chem. Eur. J.*, **2021**, 27, 16062-16070. Link: [\[here\]](#).

4. **Cover Picture**: “Towards Reliable and Reproducible Research in Organic Photocatalysis by Carbon Nitride”, *ACS Catalysis*, **2025**, 15, 16792–16809. Link: [\[here\]](#).



## Participation in Editorial Boards of Scientific Journals

- 2023: He acted as Lead Guest Editor of the themed collection “Modern Catalytic Approaches in Organic Chemistry” of *RSC Advances* (Publisher: Royal Society of Chemistry). Link: [\[here\]](#).
- 2025-present: Member of Editorial Advisory Board of the international journal *Chemistry – Methods* (Publisher: John Wiley & Sons). Link: [\[here\]](#).

## Referee for International Journals

He served as a Reviewer for important international journals, including: 1. *Accounts of Chemical Research*, 2. *ACS Nano*, 3. *Nature Communications*, 4. *Angewandte Chemie*, 5. *Journal of the American Chemical Society*, 6. *Small*, 7. *ACS Catalysis*, 8. *Chemical Science*, 9. *ChemSusChem*, 10. *Organic Letters*, 11. *ACS Applied Nano Materials*, 12.

ACS Applied Nano Materials, **13**. Catalysis Science & Technology, **14**. Chinese Journal of Chemistry, **15**. ChemComm, **16**. ChemElectroChem, **17**. ChemCatChem, **18**. Journal of Organic Chemistry, **19**. Heliyon, **20**. ChemPhotoChem, **21**. Energy & Fuels, **22**. Beilstein Journal of Organic Chemistry, **23**. Dalton Transactions, **24**. Advanced Synthesis & Catalysis, **25**. Journal of Flow Chemistry, **26**. Chemistry – A European Journal, **27**. Chem, **28**. ACS Applied Materials & Interfaces and **29**. JACS Au.

## Research Funding and Participations in Projects

In the period 2021-2025, as an Assistant Professor, **Giacomo Filippini** has actively participated and worked - in the role of *Principal Investigator*, *Participant* or *External Collaborator* - in international and national funded **Research Projects**.

### • ERC Advanced Grant e-DOTS

Funding agency: European Research Council

Total Amount: 2.500.000 € - Budget of the Unit: 679.768 €

Principal Investigator: Prof. Maurizio Prato (University of Trieste)

Role in the project: **Participant** - In particular, he participated in conceiving and writing the project proposal. In addition, as an Assistant Professor, he actively worked on the design, production and characterization of novel catalytically active carbon dots. These photoactive nanoparticles have been effectively used as recyclable photoredox catalysts to initiate relevant organic transformations. Furthermore, amine-rich carbon dots were produced and employed as nano-aminocatalysts to drive the functionalization of suitable carbonyl compounds *via* enamine and iminium ion catalysis. **Main Scientific Outcomes**: ChemSusChem, **2023**, *16*, e202202399; ACS Catalysis, **2024**, *14*, 13429–13438; ACS Nano, **2025**, *19*, 4887–4900; ChemSusChem, **2025**, e202500521; Angew. Chem. Int. Ed., **2025**, e202515073. Period: January 2021 - December 2025

### • Microgrants 2021 - Photochemical Valorization of Phenols

Funding agency: Region Friuli-Venezia Giulia (Italy)

Total Amount: 3800 €

Role in the project: **Principal Investigator** - In particular, he participated in conceiving, writing and leading the project. This project aimed at the development of new efficient phenol-based photocatalytic systems for synthetic applications. We developed a novel photocatalyst capable to drive the functionalization of olefin with suitable radical sources. Moreover, we sought to design novel photochemical approaches that allow for the direct radical functionalization of valuable phenol-containing molecules with  $\alpha$ -iodo sulfones. **Main Scientific Outcomes**: ACS Catalysis, **2022**, *12*, 4290-4295; Org. Lett., **2022**, *24*, 2961-2966 and J. Org. Chem., **2023**, *88*, 6008-6016. Period: July 2021 - June 2023

### • Catalytic Valorization of Agri-Food Wastes and By-Products

Funding agency: Phenbiox SRL (Bologna, Italy)

Total Amount: 33.744,83 €

Role in the project: **Principal Investigator** – This was a collaboration between academy and industry. In particular, he participated in conceiving, writing and leading the project. This project was carried out in cooperation with the company Phenbiox SRL (Bologna,

Italy) and focused on the design of new organic transformations employing lignin as photo-initiator. **Main Scientific Outcome:** *ACS Sustain. Chem. Eng.*, **2025**, 13, 12300–12310. Period: November 2022 - November 2024

• **Synthetic and Structural Synergy Towards Advanced Heterogeneous Photoredox Catalysis - PRIN 2022**

Funding agency: Ministero dell'Università e della Ricerca - MUR (Italy)

Total Amount: 193.345 € - Budget of the Unit: 81.442 €

Principal Investigator: Prof. Paolo Fornasiero (University of Trieste)

Role in the project: **Participant** - In particular, as an Assistant Professor, he participated in conceiving and writing the project proposal. Moreover, he actively worked on the preparation, characterization and application of novel catalytically active metal-containing carbon nitrides. These materials have been used in C-C, C-N and C-O cross coupling reactions. **Main Scientific Outcomes:** *Adv. Sci.* **2023**, 10, 2303781; *Chem. Eur. J.*, **2023**, e202301718 and *Angew. Chem. Int. Ed.*, **2023**, e202313540. Period: June 2023 - February 2026

• **Chiral SUPRAMolecular Assemblies for Sustainable PHOTOCHEMical CO<sub>2</sub> Valorization - SupraPhotoChem - PRIN 2022 - PNRR**

Funding agency: Ministero dell'Università e della Ricerca - MUR (Italy)

Total Amount: 239.698 €

Principal Investigators: Prof. Luca Dell'Amico (University of Padova) and Prof. Simona Bettini (University of Salento)

Role in the project: **External Collaborator** - As an external collaborator, he participated in conceiving and writing the project proposal. In addition, he has worked on the preparation, characterization and application of novel and photochemically active phenol-based (nano)catalysts. Period: June 2023 - February 2026

• **Microgrants 2024 - Use of Carbon Nitrides in Single-Atom Heterogeneous Catalysis for Synthetic Purposes**

Funding agency: Region Friuli-Venezia Giulia (Italy)

Total Amount: 3750 €

Role in the project: **Principal Investigator** - In particular, he participated in conceiving, writing and leading the project. This project aimed at designing new metal-based heterogeneous photocatalysts for the sustainable production of relevant organic chemicals. These materials were used to drive the production of relevant organic molecules. **Main Scientific Outcome:** *ACS Catalysis*, **2025**, 15, 16792–16809. Period: April 2024 - March 2026

• **PRIDE - Sustainable Hydrogen Production Through Photoelectrochemical Systems Activated by Sunlight**

Funding agency: Ministero della Transizione Ecologica - MITE (Italy)

Total Amount: 3.000.000 € - Budget of the Unit: 500.000 €

Principal Investigator: Prof. Paolo Fornasiero (University of Trieste)

Role in the project: **Participant** – In particular, as an Assistant Professor, he participated in the development of novel photo-catalytically active materials. The PRIDE project aims to

develop new sustainable photoanode and photocathode materials for use in water splitting for hydrogen generation. *Period*: April 2025 - June 2026

- **Chiral Metal Nanorods for Enantioselective (Amino)catalysis (CHIMERA)**

*Funding agency*: Fundación BBVA "Fundamentos" Program (Spain)

*Total Amount*: 199.500 €

*Principal Investigators*: Prof. Luis Manuel Liz Marzán (CIC biomaGUNE) and Prof. Maurizio Prato (CIC biomaGUNE)

*Role in the project*: **External Collaborator** - As an external collaborator, he participated in conceiving and writing the project proposal. In addition, he worked on the production and application of novel catalytically active chiral gold-based nanorods in enantioselective organic synthesis. In particular, these materials have been used as catalytic systems to drive the production of enantioenriched organic molecules. *Period*: October 2025 - October 2027

- **PhotoElectrocatalytic smart Systems for CHEmicals and FUEls production (PESCHE-FU) – FIS 3**

*Funding agency*: Ministero dell'Università e della Ricerca - MUR (Italy)

*Total Amount*: 2300000 €

*Principal Investigator*: Prof. Paolo Fornasiero (University of Trieste)

*Role in the project*: **Participant** - In particular, as an Assistant Professor, he participated in conceiving and writing the project proposal. Moreover, he is actively working on the preparation, characterization and application of novel catalytically active materials for hydrogenation reactions. *Period*: December 2025 - May 2031

## **National and International Collaboration**

In the period 2018-2025, **Giacomo Filippini** has actively collaborated with a chemical company and numerous national and international research groups operating across Europe, the United Kingdom, and the United States. The activities have been focused in the following fields: catalysis, materials science and organic synthesis.

- Collaborations at the University of Trieste (Italy):

During the period 2018-2025, Giacomo Filippini has actively collaborated with numerous Scientists working at the Department of Chemical and Pharmaceutical Sciences (DSCF) of the **University of Trieste** (Italy), namely: Prof. Maurizio Prato, Prof. Paolo Fornasiero, Prof. Michele Melchionna, Prof. Pierangelo Gobbo, Prof. Lucia Pasquato, Prof. Paolo Pengo, Prof. Tiziano Montini, Dr. Jacopo Dosso, Dr. Federico Franco, Dr. Giulio Ragazzon, Dr. Susanna Bosi and Dr. Manuela Bevilacqua.

- External Collaborations:

1. **Prof. Pier Giorgio Cozzi**, University of Bologna (Italy). Period: 2018-2019. *Aim of the Collaboration*: Preparation and use of suitable perylene bisimides as photocatalytic systems for organic synthesis. In particular, these aromatic compounds were employed to

drive the production of valuable fluorinated alkyl iodides. The scientific results were published (see *ChemPhotoChem*, **2019**, 3, 193-197).

**2. Prof. Oliver Kappe**, University of Graz (Austria). Period: 2018-2019. *Aim of the Collaboration*: Development of novel photochemical organic transformations under flow-conditions. This type of reactivity was then applied to the synthesis of a key Fulvestrant intermediate in a gram scale. The scientific results were published (see *Org. Lett.*, **2019**, 21, 5341-5345).

**3. Prof. Gino Cortopassi**, University of California, Davis (United States of America). Period: 2018-2020. *Aim of the Collaboration*: Synthesis and evaluation of the biological activity of relevant quinone derivatives. The scientific results were published (see *Biomedicine&Pharmacotherapy*, **2020**, 132, 110823-110833).

**4. Prof. Carmine D'Agostino**, University of Manchester (England). Period: 2019-2020. *Aim of the Collaboration*: Studying the interaction between organic substrates and the surfaces of heterogeneous photocatalysts, namely graphitic carbon nitrides. These studies have been carried out by NMR spectroscopy. The scientific results were published (see *Sci. Adv.*, **2020**, 6, eabc9923).

**5. Prof. Marcella Bonchio**, University of Padova (Italy). Period: 2018-2020. *Aim of the Collaboration*: Studying the formation of catalytically active intermediates (such as iminium ions) on amine-rich carbon and their application in nano-organocatalysis. The scientific results were published (see *Chem*, **2020**, 6, 3022-3037).

**6. Prof. Mario Chiesa**, University of Torino (Italy). Period: 2020-2025. *Aim of the Collaboration*: Studying the nature of paramagnetic defects on catalytically active materials (e.g.; carbon nitride derivatives). The scientific results were published (see *Mater. Chem. Front.*, **2021**, 5, 7267-7275 and *Angew. Chem. Int. Ed.*, **2022**, e202210640).

**7. Prof. Roberto Lazzaroni**, University of Mons (Belgium). Period: 2019-2022. *Aim of the Collaboration*: Computational study of the photocatalytic properties of carbon nitrides. In particular, we studied the interaction between carbon nitrides and radical sources. The scientific results were published (see *Chem. Sci.*, **2022**, 13, 9927-9939).

**8. Prof. Luca Dell'Amico**, University of Padova (Italy). Period: 2018-2022. *Aim of the Collaboration*: Use of molecular phenols as photocatalysts for organic synthesis. In particular, we demonstrated that a green and simple substituted phenol is capable to effectively drive the production of relevant alkyl iodides. This transformation has been scaled up under flow conditions. The scientific results were published (see *ACS Catalysis*, **2022**, 12, 4290-4295 and *Org. Lett.*, **2022**, 24, 2961-2966).

**9. Prof. M. Montserrat Martínez**, University of A Coruña (Spain). Period: 2021-2022. *Aim of the Collaboration*: Use of BODIPY derivatives as photocatalysts for organic synthesis. Specifically, these photocatalysts have been employed to drive the synthesis of alky bromides. The scientific results were published (see *Eur. J. Org. Chem.*, **2022**, e202200622).

**10. Prof. Eric Stach**, University of Pennsylvania (United States of America). Period: 2022-2023. *Aim of the Collaboration*: Use of carbon nitrides in dual photoredox catalysis. A carbon nitride-based derivative was used in combination with a Ni(II) complex to forge novel C-N bonds. The scientific results were published (see *Adv. Sci.* **2023**, 2303781).

**11. Prof. Enrico Salvadori**, University of Torino (Italy). Period: 2020-2025. *Aim of the Collaboration*: Studying the nature of paramagnetic sites on photo-catalytically active carbon nitrides. The scientific results were published (see *Angew. Chem. Int. Ed.*, **2023**, e202313540).

**12. Prof. Armando Carlone**, University of L'Aquila (Italy). Period: 2022-2025. *Aim of the Collaboration*: Use of amine-rich carbon dots as nano-aminocatalysts to drive enantioselective reactions. The scientific results were published (see *ACS Catalysis*, **2024**, 14, 13429–13438).

**13. Dr. Claudio Gioia**, University of Trento (Italy) and **Phenbiox SRL** (Bologna, Italy). Period: 2022-2025. *Aim of the Collaboration*: Lignin was used to photochemically trigger relevant radical chain organic reactions, leading to the formation of valuable alkyl halides. The scientific results were published (see *ACS Sustain. Chem. Eng.*, **2025**, 13, 12300–12310).

**14. Prof. Massimiliano Aschi**, University of L'Aquila (Italy). Period: 2024-2025. *Aim of the Collaboration*: Use of molecular dynamics (MD) calculations for studying the reaction mechanism of an enantioselective organic transformation catalyzed by amine-rich carbon dots. The scientific results were published in preprint (see *ChemRxiv*. **2025**, doi:10.26434/chemrxiv-2025-9zww9)

**15. Prof. Luis Liz Marzán**, CIC biomaGUNE (Spain). Period: 2024-2026. *Aim of the Collaboration*: Use of gold-based nanorods as catalytic systems for synthetic applications. *This is an ongoing project.*

**16. Dr. Fabrizio Vetica**, Sapienza Università di Roma (Italy). Period: 2025-2026. *Aim of the Collaboration*: Use of carbon dots in dual catalysis for organic synthesis. *This is an ongoing project.*

## Teaching Activities

From 2021, **Giacomo Filippini** is **Lecturer** in the field of “*Organic Chemistry*” at the University of Trieste (Italy). Specifically, he is teaching organic synthesis and spectroscopic methods in organic chemistry at undergraduate and graduate levels. In addition, he has delivered an advanced course on catalysis, photocatalysis and asymmetric organocatalysis dedicated to PhD students.

1. Organic Chemistry - Laboratory course. Undergraduate degree in Science and Technology for Environment and Nature (2<sup>nd</sup> year undergraduate students). **University of Trieste**, AY 2021/2022, 36 hours, ca. 40 students.

2. Organic Chemistry II - Laboratory course. Undergraduate degree in Chemistry (2<sup>nd</sup> year undergraduate students). **University of Trieste**, AY 2022/2023, 48 hours, ca. 30 students.

3. Spectrometric Methods in Organic Chemistry. Undergraduate degree in Pharmaceutical Chemistry and Technology (3<sup>rd</sup> year undergraduate students). **University of Trieste**, AY 2023/2024, 48 hours, ca. 40 students.

4. Organic Chemistry II - Laboratory course. Undergraduate degree in Chemistry (2<sup>nd</sup> year undergraduate students). **University of Trieste**, AY 2023/2024, 48 hours, ca. 30 students.

5. Modern Synthetic Methods in Organic Chemistry. Course for PhD students in Chemistry. **University of Trieste**, AY 2023/2024, 8 hours, ca. 10 students.

6. Spectrometric Methods in Organic Chemistry. Undergraduate degree in Pharmaceutical Chemistry and Technology (2<sup>nd</sup> and 3<sup>rd</sup> years undergraduate students). **University of Trieste**, AY 2024/2025, 48 hours, ca. 80 students.

7. Organic Chemistry II - Laboratory course. Undergraduate degree in Chemistry (2<sup>nd</sup> year undergraduate students). **University of Trieste**, AY 2024/2025, 48 hours, ca. 40 students.

8. Spectrometric Methods in Organic Chemistry. Undergraduate degree in Pharmaceutical Chemistry and Technology (2<sup>nd</sup> year undergraduate students). **University of Trieste**, AY 2025/2026, 48 hours, ca. 30 students.

### **Supervised and co-Supervised Students**

From 2020, **Giacomo Filippini** has supervised and co-supervised several students in the fields of Chemistry and Nanotechnology at the University of Trieste (Italy). In particular, he has mentored: **4** bachelor's students; **5** master's students; **8** doctoral students and **2** international visiting PhD students.

1. Co-supervisor Mrs. Chiara Lanfrit: MSc in Chemistry at University of Trieste, 2020. Title of the thesis: "*Synthesis, Characterization, and Application in Aminocatalysis of Carbon Nanodots*". Final Evaluation: 110/110 *cum laude*. Supervisor: Prof. Maurizio Prato. **Next position**: Chemist at "Diaco Biofarmaceutici SRL" (Italy).

2. Co-supervisor Mr. Michele Cesco: MSc in Chemistry at University of Trieste, 2021. Title of the thesis: "*Synthesis of Molecular Cages*". Final Evaluation: 110/110 *cum laude*. Supervisor: Prof. Maurizio Prato. **Next position**: PhD student at CIC biomaGUNE - Spain (advisor: Prof. Maurizio Prato).

3. Co-supervisor Mr. Cristian Rosso: PhD in Chemistry-CHIM/06 at University of Trieste, 33<sup>th</sup> PhD cycle. Title of the thesis: "*Development of Novel Catalytic Transformations Towards Valuable Organic Intermediates*". Final Evaluation: graduated *cum laude*.

Supervisor: Prof. Maurizio Prato. **Next position**: Postdoctoral fellow at University of Padova - Italy (advisor: Prof. Luca Dell'Amico).

4. Supervisor Mrs. Ana da Lama Vázquez: Visiting PhD student from University of A Coruña, Spain, August 2021 - November 2021. In particular, she used BODIPY derivatives in organic photocatalysis.

5. Co-supervisor Mr. Francesco Palazzi: MSc in Chemistry at University of Trieste, 2022. Title of the Research Project: "*Use of Lignin for the Photochemical Iodoperfluoroalkylation of Olefins*". Final Evaluation: 103/110. Supervisor: Prof. Maurizio Prato. **Next position**: Chemist at "Johnson & Johnson Innovative Medicine" (Italy).

6. Supervisor Mrs. Lesley Rodriguez: Visiting PhD student from University of Alicante, Spain, June 2023 - August 2023. In particular, she used carbon nitride-based derivatives in organic photocatalysis.

7. Co-supervisor Mr. Giuseppe Gentile: PhD student in Chemistry-CHIM/06 at University of Trieste, 36<sup>th</sup> PhD cycle. Title of the Research Project: "*Novel Materials in Catalysis: The Case of Carbon Dots, Carbon Nitrides and Molybdenum Disulfide*". Final Evaluation: graduated *cum laude*. Supervisor: Prof. Maurizio Prato. **Next position**: Postdoctoral fellow at University of Padova - Italy (advisor: Prof. Marcella Bonchio).

8. Co-supervisor Mrs. Martina Mamone: PhD student in Chemistry-CHIM/06 at University of Trieste, 37<sup>th</sup> PhD cycle. Title of the Research Project: "*New Photo- and Nanocatalytic Systems for Application in Organic Synthesis*". Final Evaluation: graduated *cum laude*. Supervisor: Prof. Maurizio Prato. **Next position**: Chemist and product specialist at "Finapp" (Italy).

9. Co-supervisor Mrs. Gaia Grando: PhD student in Nanotechnology at University of Trieste, 38<sup>th</sup> PhD cycle, 2022-2025 (expected). Title of the Research Project: "*Development of Metal-Free Photocatalysts for Advanced Photocatalytic Organic Synthesis*". Final Evaluation: graduated *cum laude*. Supervisor: Prof. Paolo Fornasiero. **Next position**: Postdoctoral fellow at University of Trieste - Italy (advisor: Prof. Paolo Fornasiero).

10. Co-supervisor Mrs. Laura Morbiato: PhD student in Nanotechnology at University of Trieste, 38<sup>th</sup> PhD cycle, 2022-2025 (expected). Title of the Research Project: "*Carbon dots as Emergent (Photo)Catalytic Systems*". Final Evaluation: graduated *cum laude*. Supervisor: Prof. Maurizio Prato.

11. Supervisor Mr. Riccardo Tosoratti: BSc in Chemistry at University of Trieste, 2024. Title of the thesis: "*Study of the Photocatalytic Activity of a Trisubstituted Phenol for ATRA Reactions*". Final Evaluation: 110/110 cum laude. Co-supervisor: Dr. Jacopo Dosso.

12. Co-supervisor Mr. Giacomo Molinaro: BSc in Chemistry at University of Trieste, 2024. Title of the thesis: "*Study of the Photocatalytic Activity of a Novel Tetra-Phenol Derivative*". Final Evaluation: 104/110. Supervisor: Dr. Jacopo Dosso.

13. Co-supervisor Mr. Emanuele Giuliani: PhD student in Nanotechnology at University of Trieste, 38<sup>th</sup> PhD cycle, 2022-2025 (expected). Title of the Research Project: "*Tiny Tools, Great Potential: Innovation in Carbon and Gold Nanostructures*". Final Evaluation: graduated. Supervisor: Prof. Maurizio Prato.

14. Co-Supervisor Mr. Remì Martina: BSc in Chemistry at University of Trieste, 2025. Title of the thesis: "*Study of the Photocatalytic Activity of a Trisubstituted Phenol*". Final Evaluation: 110/110 cum laude. Supervisor: Dr. Jacopo Dosso.

15. Supervisor Mr. Daniele Ciampa: BSc in Chemistry at University of Trieste, 2025. Title of the thesis: "*Use of a Phenol Derivative as Photocatalytic System for Radical Reactions*". Final Evaluation: 110/110 cum laude. Co-supervisor: Dr. Jacopo Dosso.

16. Supervisor Mr. Marco Manni: PhD student in Chemistry at University of Trieste, 41<sup>th</sup> PhD cycle, 2025-2028 (expected). Title of the Research Project: "Photochemical Valorization of Phenols". Co-supervisor: Dr. Jacopo Dosso.

17. Co-supervisor Mr. Sebastiano Pallanch: PhD student in Chemistry at University of Trieste, 41<sup>th</sup> PhD cycle, 2025-2028 (expected). Title of the Research Project: "Synthesis of Novel Polyaromatic Compounds for Optoelectronic Applications". Supervisor: Dr. Jacopo Dosso.

18. Co-supervisor Mr. Riccardo Tosoratti: MSc in Chemistry at University of Trieste, 2024. Title of the thesis: "*Synthesis and Application of Novel Polyaromatic Compounds*". Supervisor: Dr. Jacopo Dosso.

19. Supervisor Mr. Giacomo Molinaro: MSc in Chemistry at University of Trieste, 2024. Title of the thesis: "*Study of the Photocatalytic Activity of Novel Phenol-Rich Carbon Dots*". Supervisor: Dr. Jacopo Dosso.

### **Member of Evaluation Committees**

1. Member of Commissions for the recruitment of post doc candidates in the field of organic chemistry - number of committees: 8 - **University of Trieste** (Italy). Period: 2021-2025.

2. Member of the Commission for Admission to the PhD in Chemistry - **University of Trieste** and **Ca' Foscari University of Venice** (Italy) - 38<sup>th</sup> cycle. Trieste 18-19 July 2022.

3. Examiner of Doctoral Thesis in Chemistry - number of candidates: 4 - **University of Padova** (Italy), 24/03/2023.

4. Examiner of Bachelor Thesis in Chemistry - **University of Trieste** (Italy), 21/07/2023.

5. Examiner of Doctoral Thesis in Chemistry - number of candidates: 2 - **University of Trieste** (Italy), 21/09/2023.

6. Examiner of Master Thesis in Pharmaceutical Chemistry and Technology - **University of Trieste** (Italy), 20/03/2024.
7. Examiner of Master Thesis in Pharmaceutical Chemistry and Technology - **University of Trieste** (Italy), 20/03/2025.
8. Examiner of Master Thesis in Chemistry - **University of Trieste** (Italy), 18/07/2025.
9. Examiner of Bachelor Thesis in Chemistry - **University of Trieste** (Italy), 19/09/2025.
10. 2025 - External evaluator of research proposals for **Sapienza Università di Roma** (Italy), Rome (Italy).

### Academic Duties

1. 2021 (12 months): Scientific responsible for the nuclear magnetic resonance (NMR) spectrometers of the Department of Chemical and Pharmaceutical Sciences (DSCF) of the University of Trieste (Italy).
2. 2024-present: Erasmus coordinator for the inter-institutional-agreement in the field of Chemistry between the University of Trieste (Italy), the University of Graz (Austria) and the Graz University of Technology (Austria).
3. 2024-present: Responsible for security and fire prevention in the Department of Chemical and Pharmaceutical Sciences (DSCF) of the University of Trieste (Italy).
4. 2024-present: Responsible for social media (social media: Twitter Account) in the Department of Chemical and Pharmaceutical Sciences (DSCF) of the University of Trieste (Italy).
5. 2024-2025: Responsible for the visiting professor Prof. Yusuke Morisawa of the Kindai University (Osaka, Japan). This activity was framed in the context of the "*Call of the University of Trieste's centenary*" of the University of Trieste (Italy).
6. 2025-present: Member of the Scientific Committee of "*Collegio Universitario Luciano Fonda*". In particular, "*Collegio Universitario Luciano Fonda*" is a residential college of merit based in Trieste (Italy), that is officially recognized by the Italian Ministry of University and Research (MUR). Link: [\[here\]](#).
7. 2026-present: Board Member of the Italian Chemical Society (SCI), Friuli Venezia Giulia Section (2026–2028 term).



### Invited Presentations at Conferences

1. "I Giovani e la Chimica in Friuli-Venezia Giulia" -Trieste (Italy), September 30, 2021.  
- Oral Communication: **Photocatalytic Radical Perfluoroalkylation of Organic Compounds.**

2. "Asymmetric Organocatalysis after the Gold Rush – Challenges and Developments at the time of the Nobel Prize" - Italy (online), November 19, 2021.

- Oral Communication: **Carbon Dots as Nano-Organocatalysts for Synthetic Applications.**

3. "From Homogeneous Catalysis to Surface Organometallic Chemistry and Single Atom Catalyst", Accademia Nazionale dei Lincei, - Rome (Italy), May 30-31, 2024.

- Oral Communication: **Tailored Nitrogen-Doped Carbon Dots as Nano-Organocatalysts in Aqueous Media.**

- Poster Communication: **Tailored Nitrogen-Doped Carbon Dots as Nano-Organocatalysts in Aqueous Media.**

4. "XXVIII National Congress of the Italian Chemical Society: Chemistry Elements of Future" - Milan (Italy), August 26-30, 2024.

- Oral Communication: **New Catalytic Approaches Towards the Synthesis of Organic Compounds.**

5. "5° ChirItaly 2025" - Monteortone (Italy), 10-12 March, 2025.

- Oral Communication: **Amine-Rich Carbon Dots as Novel Nano-Aminocatalytic Platforms in Organic Synthesis.**

6. "16th Young Investigator Workshop (YIW2025)" of the EuChemS (European Chemical Society) Division of Organic Chemistry - Copenhagen (Denmark), June 26-27, 2025. In particular, the Division of Organic Chemistry of "*Società Chimica Italiana*" has given me the opportunity of representing Italy at this European congress.

- Oral Communication: **New Catalytic Approaches Towards the Synthesis of Organic Compounds.**

7. "3<sup>rd</sup> Melchiorre Group Rendezvous" - Bologna (Italy), November 13-14, 2025. This was an international organic chemistry congress. The meeting brought together former and current members of the Melchiorre Group from Europe, the US, India, Brazil and China.

- Oral Communication: **New Catalytic Approaches Towards the Synthesis of Organic Compounds.**

8. "CINMPIS DAYS 2026" - Catania (Italy), February 16-18, 2026.

- Oral Communication: **New Catalytic Approaches Towards the Synthesis of Organic Compounds.**

## Participation at Conferences

1. "40<sup>th</sup> "A. CORBELLA" INTERNATIONAL SUMMER SCHOOL ON ORGANIC SYNTHESIS - ISOS 2015" - Gargnano (Italy), June 14-18, 2015.

- Oral Communication: **Photochemical Direct Perfluoroalkylation of Phenols.**

2. "3<sup>rd</sup> US-Spain Symposium on Asymmetric Catalysis and Chemical Synthesis" - Bilbao (Spain), 26-27 May, 2016.

- Oral Communication: **Photochemical Enantioselective Alkylation of Aldehydes with  $\alpha$ -Iodo Sulfones.**

3. "11th Spanish-Italian Symposium on Organic Chemistry SISOC-XI" - Donostia-San Sebastián (Spain), 13-15 July, 2016.

- Poster Communication: **Photochemical Enantioselective Alkylation of Aldehydes with  $\alpha$ -Iodo Sulfones.**

- Oral Communication: **Photochemical Enantioselective Alkylation of Aldehydes with  $\alpha$ -Iodo Sulfones: Formal Enantioselective Methylation of Aldehydes.**

4. "ICIQ PhD Day 2017" - Institute of Chemical Research of Catalonia (ICIQ), Av. Països Catalans 16 – 43007 Tarragona (Spain), June 15-16, 2017.

- Oral Communication: **Enantioselective Formal  $\alpha$ -Methylation and  $\alpha$ -Benzylation of Aldehydes by Means of Photo-Organocatalysis.**

5. "20th European Symposium on Organic Chemistry (ESOC 2017)" - Köln (Germany), July 2-6, 2017.

- Poster Communication: **Enantioselective Formal  $\alpha$ -Methylation and  $\alpha$ -Benzylation of Aldehydes by Means of Photo-Organocatalysis.**

6. "E-Wispoc 2019: European Winter School on Physical Organic Chemistry" - Bressanone (Italy), January 27-1 February, 2019.

- Poster Communication: **Water-Soluble Nitrogen-Doped Carbon Nanodots as Efficient Aminocatalysts for Organic Synthesis.**

7. "Workshop on Low-Dimensional Materials" - Donostia-San Sebastián (Spain), July 21-23, 2019.

- Oral Communication: **Catalytic Application of Nitrogen-Doped Carbon Nano Dots (NCNDs) in Organic Synthesis.**

8. "XXXIX Convegno Nazionale della Divisione di Chimica Organica, CDCO Torino 2019" - Torino (Italy), September 8-12, 2019.

- Oral Communication: **Highly Performing Iodoperfluoroalkylation of Alkenes Triggered by the Photochemical Activity of Perylene Diimides.**

9. "E-Wispoc" - Ischia (Italy), 26-30 September, 2022.

- Poster Communication: **Tailored Nitrogen-Doped Carbon Dots as Nano-Organocatalysts in Aqueous Media.**

- Oral Communication: **Tailored Nitrogen-Doped Carbon Dots as Nano-Organocatalysts in Aqueous Media.**

10. "PHOTOCAT24 School of Photochemistry: from Photocatalysis to Photobiology" - Padova (Italy), 2-7 June, 2024.

- Poster Communication: **Light-Driven Alkylation of Phenols: Scope, Mechanistic Insights and Applications in Organophotoredox Catalysis.**

11. "XLII Convegno Nazionale della Divisione di Chimica Organica CDCO 2025" - Villasimius (Italy), 21-25 September, 2025.

- Poster Communication: **Tailoring of Carbon Nitride Structure Steers the Activity in Dual Photocatalysis.**

## **Organization of Conferences**

1. Member of the Organizing Committee of the "*Italian Supramolecular Chemistry Conference - Supramol2026*". This national congress will be hosted in Trieste (Italy) in June 2026. Link: [\[here\]](#).

2. Member of the International Advisory Boards of the "3rd Symposium for Young Chemists - SYNC 2026". This international congress will be hosted in Rome (Italy) in June 2026. Link: [\[here\]](#).

## Memberships of Scientific Societies and Academies

• 2015-present: Member, Italian Chemical Society - Division of Organic Chemistry. Web site: [\[here\]](#)



• 2023-present: Member of the European Cultural Institute "Accademia Marchigiana di Scienze, Lettere ed Arti" – Academy Class: Mathematical, Physical, Natural Sciences and their Applications. "Accademia Marchigiana di Scienze, Lettere ed Arti" is based in Ancona (Italy) and officially recognized by the Italian Ministry of Culture (MIC). Web site: [\[here\]](#).



• 2025-present: Member of National Interuniversity Consortium of Materials Science and Technology (INSTM). Web site: [\[here\]](#).



## Personal Skills

• Mother tongue:

- Italian

• Other language(s):

- English language ability at the level B1 (CEFR).

- Basic knowledge of Spanish.

• Professional & Research Skills:

- Proven ability to design and coordinate research activities in close alignment with team members.

- Extensive experience working within cross-functional research environments, integrating diverse scientific perspectives.

- Skilled in supervising research personnel, mentoring junior scientists, and managing laboratory workflows.

- Strong professional background in teaching, lecturing, and providing technical training.

- Exceptional verbal and written communication skills, with a track record of presenting complex data to diverse audiences.

- Excellent time and resource management, with the self-motivation to lead projects independently and the interpersonal skills to thrive in a team.

• Technical Management:

- Proven ability to design and execute complex multi-step synthetic routes while optimizing timelines and resource allocation.

- Expert at monitoring progress and ensuring the successful achievement of project objectives within strict deadlines.

• Job-related skills:

- Literature research.

- Treatment of toxic chemical compounds.

- Organic synthesis.
- Synthesis of carbon-based nanostructures.
- Catalysis, photocatalysis and nano-catalysis.
- Purification and analytical skills.
- Characterization of organic compounds.
- Characterization of carbon-based nanostructures.
- Analytical instruments: NMR, HPLC-UV, Polarimeter, FT-IR, GC-MS, Fluorometer.

- Computer skills:

Good command of:

- Microsoft Office
- MestreNova
- Windows
- Teams
- Chem-Draw

- Driving license: B

Dr. Giacomo Filippini

A handwritten signature in black ink, reading "Giacomo Filippini". The signature is written in a cursive style with a prominent initial 'G' and a long, sweeping underline.