

# CURRICULUM VITAE

## Personal Information

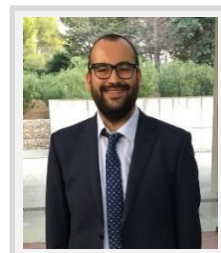
**Giacomo Filippini**

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)

E-mail: [gfilippini@units.it](mailto:gfilippini@units.it); Phone: +39 3428365085

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



## Areas of Expertise

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

### Research Overview:

My 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. 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, photocatalysis and nano-organocatalysis.

- *Research training*: During the period spent in the research laboratory of Professor Maurizio Prato, I worked on the development of novel (photo)catalytic organic transformations. In particular, I 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). Carbon dots and carbon nitrides may be easily prepared from molecular precursors, such as melamine, arginine and urea, exploiting bottom up synthetic approaches. Within the Prato's group, I had the opportunity to learn how to prepare, purify and characterize these nitrogen-containing nanomaterials. These materials have been efficiently used to drive relevant organic reactions, including enantioselective transformations, under mild operative conditions (see *Sci. Adv.*, **2020**, *6*, eabc9923 and *Chem*, **2020**, *6*, 3022-3037).

## Education

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

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

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

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

- *Research training*: During my doctoral studies in the laboratory of Professor Paolo Melchiorre, I had the opportunity to further expand my knowledge in organic chemistry. The main scientific objective of my doctoral research was to employ and combine two powerful fields of molecule activation, photochemistry and organocatalysis, to efficiently realize new carbon-carbon bond forming transformations in an environmentally friendly way. Initially, I focused on the development of a metal-free photochemical strategy for the direct aromatic perfluoroalkylation and trifluoromethylation of substituted phenols. In the second part of my PhD work, I 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, I was involved in the development of an photo-organocatalytic transformation under flow conditions. We studied the scale-up of an enantioselective photochemical alkylation reaction between aldehydes and suitable radical precursors.

- October 2011-October 2013: **Master Degree**, graduated with honors (110 *cum laude*).  
"Scuola di Scienze", Dipartimento di Chimica Industriale "Toso Montanari" - **Università di Bologna** (Italy);  
supervisor: Professor Paolo Righi. Web site: [\[here\]](#).  
- *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, I further refined my skills on the development of enantioselective organocatalytic processes. In particular, I 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**, graduated with honors (110 *cum laude*).  
Facoltà di Chimica Industriale, Dipartimento di Chimica Organica "A. Mangini" - **Università di Bologna** (Italy);  
supervisor: Professor Alfredo Ricci. Web site: [\[here\]](#).  
- *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, I was involved in the development of enantioselective catalytic strategies promoted by small chiral organic molecules. Specifically, I 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

- 2008**: Prize as one of the best graduates in high schools, province Pesaro-Urbino, Italy.
- 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 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)  
This fellowship is granted to the PhD students with the best Curriculum Vitae.
- 2016**: Awarded as one of the best speaker at "3rd US-Spain Symposium on Asymmetric Catalysis and Chemical Synthesis", Bilbao (Spain), 26-27 May 2016.
- 2022**: Selected as "*Young Researcher to Watch*" by the international journal EurJOC.
- 2022**: Best flash talk award at "E-Wispoc", Ischia (Italy), 26-30 September 2022.
- 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 "G. Ciamician" Medal of the Italian Chemical Society.

## Publications in International Journals

**Giacomo Filippini** has an H-factor of **19** and has attracted a total of **942** citations for the period 2013-2024 (source: Scopus as of June 26, 2024).

38 Research Articles/Reviews, 1 Book Chapter.

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 Nitriles 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: [\[here\]](#).
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.**
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: [\[here\]](#).

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: [\[here\]](#).
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: [\[here\]](#).

## 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: [\[here\]](#).

## Referee for International Journals

I served as a Reviewer for *Accounts of Chemical Research* (IF 24.5), *ACS Nano* (IF 18.0), *Nature Communications* (IF 17.0), *Angewandte Chemie* (IF 16.8), *Journal of the American Chemical Society* (IF 16.4), *Small* (IF 15.2), *ACS Catalysis* (IF 13.7), *Chemical Science* (IF 9.9), *ChemSusChem* (IF 9.1), *Organic Letters* (IF 6.1), *ACS Applied Nano Materials* (IF 6.1), *ACS Applied Nano Materials* (IF 5.9), *Catalysis Science & Technology* (IF 5.7), *Chinese Journal of Chemistry* (IF 5.6), *ChemComm* (IF 5.0), *ChemElectroChem* (IF 4.8), *ChemCatChem* (IF 4.5), *Journal of Organic Chemistry* (IF 4.2), *Heliyon* (IF 3.8), *ChemPhotoChem* (IF 3.7), *Energy & Fuels* (IF 3.6) and *Beilstein Journal of Organic Chemistry* (IF 2.5).

## Participation in Editorial Boards of Scientific Journals

- I acted as Lead Guest Editor of the themed collection “Modern Catalytic Approaches in Organic Chemistry” of *RSC Advances*. Link: [\[here\]](#).

## Supervised and co-Supervised 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.
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.
3. Co-supervisor Dr. 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*”. Defense: 13-April-2021. 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.
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*”. Evaluation: 103/110. Supervisor: Prof. Maurizio Prato.
6. Supervisor Mrs. Lesley Rodriguez: Visiting PhD student from University of Alicante, Spain, June 2023 - August 2023.
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, 2021-2024 (expected). Title of the Research Project: “*Use of Carbon Dots as Nano-organocatalysts in Synthetic Chemistry*”. Supervisor: Prof. Maurizio Prato.
9. Supervisor Mr. Andrea Bernardi: PhD student in Chemistry-CHIM/06 at University of Trieste, 38<sup>th</sup> PhD cycle, 2022-2025 (expected).  
Title of the Research Project: “*Catalytic Valorization of Agri-Food Wastes and By-Products*”. Co-supervisor: Prof. Maurizio Prato.



10. 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 Organic Synthesis*”. Supervisor: Prof. Paolo Fornasiero.

11. 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: “*Synthesis and Applications of Carbon Dots*”. Supervisor: Prof. Maurizio Prato.

12. 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*”.

13. Co-supervisor Mr. Giacomo Molinaro: BSc in Chemistry at University of Trieste, 2024. Supervisor: Dr. Jacopo Dosso. Title of the thesis: “*Study of the Photocatalytic Activity of a Novel Tetra-Phenol Derivative*”.

## 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: [\[here\]](#).



## Research Funding

● **Microgrants 2021** - Photochemical Valorization of Phenols

Funding agency: Region Friuli-Venezia Giulia (Italy)

Total Amount: 3800 €

Role in the project: Principal Investigator

Period: July 2021 - June 2023

- **FRA 2021** - Fondo per la Ricerca di Ateneo 2021

Funding agency: University of Trieste

Total Amount: 3000 €

Role in the project: Principal Investigator

Period: June 2021 - December 2021

- **FRA 2022** - Fondo per la Ricerca di Ateneo 2022

Funding agency: University of Trieste

Total Amount: 1150 €

Role in the project: Principal Investigator

Period: June 2022 - December 2022

- **FRA 2023** - Fondo per la Ricerca di Ateneo 2023

Funding agency: University of Trieste

Total Amount: 1150 €

Role in the project: Principal Investigator

Period: June 2023 - December 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

Period: November 2022 - November 2025

- **Synthetic and Structural Synergy Towards Advanced Heterogeneous Photoredox Catalysis**

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

Total Amount: 81.442 €

Role in the project: Participant

Period: June 2023 - October 2025

- **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

Period: April 2024 - March 2026

- **FRA 2024** - Fondo per la Ricerca di Ateneo 2024

Funding agency: University of Trieste

Total Amount: 1700 €

Role in the project: Principal Investigator

Period: April 2024 - December 2024

## National and International Collaboration

**1. Prof. Pier Giorgio Cozzi, University of Bologna (Italy)**

Use of perylene bisimides as photocatalysts for organic synthesis. The scientific results were published (see *ChemPhotoChem*, **2019**, 3, 193-197).

**2. Prof. Oliver Kappe, University of Graz (Austria)**

Development of novel photochemical organic transformations under flow-conditions. The scientific results were published (see *Org. Lett.*, **2019**, 21, 5341-5345).

**3. Prof. Gino Cortopassi, University of California, Davis (United States of America)**

Synthesis of biologically active organic molecules. The scientific results were published (see *Biomedicine&Pharmacotherapy*, **2020**, 132, 110823-110833).

**4. Prof. Carmine D'Agostino, University of Manchester (England)**

Studying the interaction between organic substrates and the surfaces of heterogeneous photocatalysts. The scientific results were published (see *Sci. Adv.*, **2020**, 6, eabc9923).

**5. Prof. Marcella Bonchio, University of Padova (Italy)**

Studying the formation of catalytically active intermediates on amine-rich carbon. The scientific results were published (see *Chem*, **2020**, 6, 3022-3037).

**6. Prof. Mario Chiesa, University of Torino (Italy)**

Studying the nature of paramagnetic defects on catalytically active materials. 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)**

Computational study of the photocatalytic properties of carbon nitrides. The scientific results were published (see *Chem. Sci.*, **2022**, 13, 9927-9939).

**8. Prof. Luca Dell'Amico, University of Padova (Italy)**

Use of molecular phenols as photocatalysts for organic synthesis. 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)**

Use of BODIPY derivatives as photocatalysts for organic synthesis. The scientific results were published (see *Eur. J. Org. Chem.*, **2022**, e202200622).

**10. Prof. Eric Stach, University of Pennsylvania (United States of America)**

Use of carbon nitrides in dual photoredox catalysis. The scientific results were published (see *Adv. Sci.* **2023**, 2303781).

**11. Prof. Enrico Salvadori, University of Torino (Italy)**

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)**

Use of amine-rich carbon dots as nano-aminocatalysts. This is an on-going collaboration.

**13. Dr. Claudio Gioia, University of Trento (Italy)**

Use of lignin as photo-initiator for organic synthesis. This is an on-going collaboration.

**Teaching Activities**

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. 30 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.

**Member of Evaluation Committees**

1. Examiner of Doctoral Thesis in Chemistry - University of Padova, 24/03/2023.

Candidate: Dr. Pietro Franceschi.

Supervisor: Prof. Luca Dell'Amico.

Title of the Thesis: New Photo and Electrochemical Approaches to the Construction of Complex Molecular Architectures.

2. Examiner of Doctoral Thesis in Chemistry - University of Padova, 24/03/2023.

Candidate: Dr. Ruggero Bonetto.

Supervisor: Prof. Andrea Sartorel.

Title of the Thesis: Novel Molecularly Designed Strategies for Artificial Photosynthesis.

3. Examiner of Doctoral Thesis in Chemistry - University of Padova, 24/03/2023.

Candidate: Dr. Matteo Pollastrini.

Supervisor: Prof. Alessandro Moretto.

Title of the Thesis: Bio-Inspired Foldamers: From Catalysis to Supramolecular Applications.

4. Examiner of Doctoral Thesis in Chemistry - University of Padova, 24/03/2023.

Candidate: Dr. Federico Begato.

Supervisor: Prof. Cristiano Zonta.

Title of the Thesis: Exploiting Chirality in Self-Assembled Molecular Cages.

5. Examiner of Bachelor Thesis in Chemistry - University of Trieste, 21/07/2023.

6. Examiner of Doctoral Thesis in Chemistry - University of Trieste, 21/09/2023.

Candidate: Dr. Claudia Maria Cafiero.

Supervisor: Prof. Paolo Pengo.

Title of the Thesis: Fluorophore-Gold Nanoparticle Constructs as Sensing Probes for Bacteria Identification.

7. Examiner of Doctoral Thesis in Chemistry - University of Trieste, 21/09/2023.

Candidate: Dr. Veronica Vida.

Supervisor: Prof. Federico Berti.

Title of the Thesis: Development of Sensing Strategies Targeting Bioactive Phenols from Olive Oil and Coffee.

8. Examiner of Master Thesis in Pharmaceutical Chemistry and Technology - University of Trieste, 20/03/2024.

### **Invited Presentations at Meetings and Symposia**

1. 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.**

2. 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.**

### **Participation at Conferences**

1. ICIQ's 10th Anniversary Scientific Symposium, July 16-18, 2014.

Institute of Chemical Research of Catalonia (ICIQ) - Av. Països Catalans 16 – 43007 Tarragona (Spain).

2. 40<sup>th</sup> "A. CORBELLA" INTERNATIONAL SUMMER SCHOOL ON ORGANIC SYNTHESIS – ISOS 2015 Gargnano (BS), Palazzo Feltrinelli, June 14-18, 2015.

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

3. 3rd US-Spain Symposium on Asymmetric Catalysis and Chemical Synthesis Bilbao 26-27 May, 2016.

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

4. 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.**

5. ICIQ PhD Day 2017, June 15-16, 2017.

Institute of Chemical Research of Catalonia (ICIQ) - Av. Països Catalans 16 – 43007 Tarragona (Spain).

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

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

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

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

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

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

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

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

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

10. Chemistry for Everyday Life, September 1-6, 2020, Camerino (Italy).

11. "I Giovani e la Chimica in Friuli-Venezia Giulia", September 30, 2021, Trieste (Italy).

- Oral Communication: **Photocatalytic Radical Perfluoroalkylation of Organic Compounds.**

12. "Ischia Advanced School of Organic Chemistry (IASOC)", September 23-26, 2022, Ischia (Italy).

13. "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.**

14. 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.**

## **Memberships of Scientific Societies**

• 2015-present: Member, Italian Chemical Society

• 2023-present: Member of the European Cultural Institute "*Accademia Marchigiana di Scienze, Lettere ed Arti*". Web site: [\[here\]](#).

## **Personal Skills**

- Mother tongue: Italian
- Other language(s):
  - English language ability at the level B1 (CEFR).
  - Basic knowledge of Spanish.
- Organizational/managerial skills:
  - Ability to plan the research activity in cooperation with the other group members.
- 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.
  - Analytical instruments: NMR, HPLC-UV, Polarimeter, IR, GC-MS.
- Computer skills: Good command of:
  - Microsoft Office
  - MestreNova
  - Windows
  - 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 flourish at the end.