Curriculum Vitæ (updated 12/05/2025) | Prof. Dr. Ing. Gianvito Vilé

Address:

Politecnico di Milano
Department of Chemistry, Materials and Chemical Engineering "Giulio Natta"
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ORCID: 0000-0003-0641-8590
Scopus: 55065086200
GoogleScholar: Gianvito Vilé

Personal information:

Date of birth: 26/11/1987 (**37 years**)
Place of birth: Mesagne (Italy)
Citizenship: Italian

MAIN SCIENTIFIC ACHIEVEMENTS

- Designed the first single-atom catalyst based on carbon materials. Developed new understanding of their local structure, enhancing the design of more efficient single-atom catalysts for various reactions.
- Developed novel photocatalytic methods for C-X coupling, replacing iridium-nickel dual photocatalysts with a single-atom heterogeneous catalyst, significantly improving the sustainability and cost-effectiveness of the synthetic method for fine chemical production.
- Engineered flow reactors for both photochemical and traditional catalytic reactions, advancing the scalability and efficiency of these methods, applying these tools in industrially-relevant applications.
- 60+ articles in peer-reviewed journals, 18 front covers, 5400+ citations (average citation:paper = 90), h-index 31. All publications are aligned with sustainable chemistry, addressing green methods for chemical transformations, waste utilization, and the removal of pollutants. The focus on efficient, earth-abundant catalysts and renewable processes underpins this theme.
- 6+ million EUR in grants in the last 5 years, including an ERC Starting Grant in 2022.
- Editorial board member for 6 major journals in chemistry (for ACS, Elsevier, RSC, and Wiley), reviewer for 20+ journals, and member of several international advisory panels and panel evaluation committees

RESEARCH INTERESTS

Heterogeneous catalysis | Single-atom catalysts | Photocatalysis | Catalyst structure-function relationships | Cayalyst characterization | Reactivity studies (in situ and operando) | Structured catalysts | Hydrogenations and oxidations | Sustainable and green circular processes | Continuous-flow reactors | Chemical reactors | Process simulations

EDUCATION & TRAINING

2022 **Habilitation** for a Full Professorship in Chemistry (03/B1 and 03/B2) and Chemical Engineering (09/D3).

2016 **Ph.D.** (**with medal**, highest grade), **ETH Zurich** (Switzerland), Thesis title: "Design of new nanostructured catalysts for selective hydrogenations in flow"

2011 **MSc** (110/110 cum laude) in Chemical Engineering, **Politecnico di Milano** (Italy)

2010 **Visiting Student**, Department of Chemical Engineering, **TU Delft** (The Netherlands) and Institute for Chemical and Bioengineering, **ETH Zurich** (Switzerland)

2009 **BSc** (110/110 cum laude) in Chemical Engineering, **Politecnico di Milano** (Italy)

CURRENT ACADEMIC POSITION

2023 - today **Associate Professor**, Department of Chemistry, Materials and Chemical Engineering, **Politecnico di Milano** (Italy)

Member of the **PhD Board in Industrial Chemistry and Chemical Engineering**, Department of Chemistry, Materials and Chemical Engineering, **Politecnico di Milano** (Italy)

Member of the **National PhD Board in Catalysis**, Department of Chemistry, Materials and Chemical Engineering, **Politecnico di Milano** (Italy)

PREVIOUS ACADEMIC AND RESEARCH POSITIONS

2020 - 2023 **Group Leader** and **Tenure-Track Assistant Professor**, Department of Chemistry, Materials and Chemical Engineering, **Politecnico di Milano** (Italy)

2016 - 2019 **Lab Head**, Department of Chemistry Technologies, **Idorsia Pharmaceuticals** (Switzerland)

2016 - 2016 **R&D Scientist**, **Sensirion AG** (Switzerland)

2011 - 2016 **Scientific Assistant in "Catalysis Engineering"**, Institute for Chemical and Bioengineering, **ETH Zurich** (Switzerland)

2010 - 2011 **Visiting Student**, Department of Chemical Engineering, **TU Delft** (The Netherlands)

AWARDS & HONORS

2025 **EFCATS Young Researcher Award 2025**, **European Federation of Catalysis Society**

2024 "**Premio Robert Karl Grasselli 2024**", Italian Chemical Society and Intervidisional Group of Catalysis

2024 **Membro Junior dell'Accademia di Ingegneria e Tecnologia**, Italy

2024 "**ERC Proof of Concept**", European Research Council

2023 Elected "**Fellow of the Young Academy of Europe**", Young Academy of Europe

2022 "**ERC Starting Grant**", European Research Council

2022 "**Alfredo di Braccio Award**" for contributions in the field of single-atom catalysis, Accademia dei Lincei

2021 "**Gricu Award**" for contributions in the field of catalysis, Italian Chemical Engineering Society

2021 "**Emerging Investigators in Chemical Engineering**", Reaction Chemistry & Engineering**, Royal Society of Chemistry**

2021 **Humboldt Junior Fellowship**, Humboldt Foundation at the University of Bayreuth

2020 "**Expert for the Chemical and Materials Industry**", **World Economic Forum**

2019 "**Influential Researcher in Chemical Engineering**", I&EC Research, **American Chemical Society**

2019 Felder Award, Fondazione Bracco & Fondazione Politecnico di Milano, Italy

2016 **Dimistris N. Chorafas Award in Chemistry**, Weizmann Institute of Science, Israel

2016 Materials & Industrial Processes Award, MaP Competence Center of ETH Zurich

2016 **ETH Medal for Outstanding PhD Thesis**, ETH Zurich

2015 Outstanding Reviewer, Wiley-VCH, and PubChemSoc Europe

2014 "DSM award" for Best Poster Presentation in Catalysis, SCS Fall Meeting and DSM

2014 SCNAT/SCS Chemistry Travel award, Swiss Academy of Sciences & Swiss Chemical Society

2012 "Prix SGVC" award for young talents, Swiss Process and Chemical Engineers Society

2010 Erasmus/LLP Scholarship, European Union | ATHENS Scholarship, TU Delft

2010 "Make Science Make Sense" award, Bayer

COMMISSIONS OF TRUST

(a) Editorial services

2023 - today **Advisory Board Member** of *Chemical Science* (IF 9.969, Royal Society of Chemistry).

2022 - today **Editorial Board Member** of *Applied Catalysis B* (IF 22.1, Elsevier).

2022 - today **Early-Career Editorial Board Member** of *ACS ES&T Engineering* (IF 7.1, Americal Chemical Society).

2022 - today **Editorial Board Member** of *Molecular Catalysis* (IF 5.089, Elsevier).

2021 - today **Editorial Board Member** of *ChemCatChem* (IF 4.85, Wiley).

2021 - today **Early-Career Editorial Board Member** of *Chemical Engineering and Processing - Process Intensification* (IF 4.3).

2022 - today Invited Guest Editor for the *Molecular Catalysis* special issue "Nano and single-atom catalysts for renewable chemicals", together with **Prof. Ning Yan** (National University of Singapore).

2021 - today Invited Guest Editor for the *ChemCatChem* special issue "Developments at the interface between surface organometallic and heterogeneous single-atom catalysts", together with **Prof. Angelika Bruckner** (Leibniz Institute for Catalysis) and **Prof. Botao Qiao** (Dalian Institute of Chemical Physics).

2021 - today Invited Guest Editor for the *Chem. Eng. Process.* special issue "Process intensification approaches for waste to value", together with **Prof. Dmitry Murzin** (Åbo Akademi University).

2020 - today Invited Guest Editor of a *Processes* special issue on "Catalytic Processes in Continuous Nanostructured Reactor", together with **Prof. Jiaxu Liu** (Dalian University of Technology).

2017 - 2018 Invited Guest Editor for the *Catalysis Today* special issue "Catalysis in continuous flow microreactors".

(b) Evaluation of competitive grants

2024 - today **Panel Member (Product and processes engineering)** for the National Science Center **Poland**, (call: **OPUS Research Projects**).

2023 - today **Panel Member (Chemical Engineering & Catalysis)** for the Research Foundation Flanders FWO (call: **PhD fellowships**).

2023 - today **Panel Member (Physical Sciences)** for China's New Cornerstone Investigator Program (equivalent to the ERC in Europe, awarding exceptional scientists with stable and long-term support for fundamental discovery research, with up to 5 million yuan per year).

2021 - today **Remote Evaluator** for the European Commission (**ERC CoG**, **ERC StG**, **WIDERA**, **MSCA-Doctoral Network**, **EIC Pathfinder**, and **COST actions**), **Singapore** National Research Foundation, Science Foundation **Ireland**, **US** National Science Foundation, **Slovak** Academy of Sciences, **Czech** Academy of Sciences, National Science Center **Poland**, Research Foundation **Flanders** FWO, National Research Development and Innovation Office of **Hungary**, **Dutch** Research Council.

2020 - today **Expert Evaluator** for the progress of the European Commission H2020 project FLIX ("FLow chemistry for Isotopic eXchange"), integrating catalysis and flow reactor design. Partners: Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Leibniz Institute of Catalysis, National Institute of Applied Sciences of Toulouse, Aarhus University, ComInnex, Absiskey, University of Amsterdam.

(c) Organization of scientific meetings and other roundtables

2025 - today **Member** of the European Commission panel on "Green Pharmaceuticals", in collaboration with the European Medicines Agency (EMA) and the European Federation of Pharmaceutical Industries and Associations (EFPIA).

2025 - today **Member** of the European Commission panel on "A new MSCA Green Charter".

2025 - 2027 **International Scientific Committee Member** of the ESCRE 2027, the European Symposium on Chemical Reaction Engineering (Milan, 2027).

2025 **Co-organizer** of the 3rd Italian Flow Chemistry Conference (Bari, 8th-9th May 2025).

2024 **Co-organizer** of the 2nd Workshop on Single-Atom Catalysts (Milan, 13th December 2024).

2022 **Co-organizer** of the International Conference on Catalysis for Fine Chemicals (Milan, autumn 2025).

2022 **Co-organizer** of the 2nd Workshop on Single-Atom Catalysts (Milan, 13th December 2024).

2023 **Co-organizer** of the Italian Flow Chemistry Conference (Milan, 27-28th November 2023).

2022 **Organizer** of the the 1st Workshop on Single-Atom Catalysts (Milan, 6th October 2022).

2018 **Organizer** of the Swiss industrial roundtable "Catalysis & Process Intensification in Switzerland",

Allschwil (Switzerland) with experts from Novartis, Roche, Syngenta, Idorsia Pharmaceuticals, Firmenich, and Givaudan.

(d) Peer reviewer for scientific journals

2012 - today **Reviewer** for *Science*, *Nat. Nanotechnol.*, *Nat. Commun.*, *Nat. Synthesis*, *Nat. Chem.*, *ACS Catal.*, *JACS*, *Chem*, *Appl. Catal. B*, *Angew. Chem. Int. Ed.*, *Chem. Catal.*, *Adv. Funct. Mater.*, *ACS Appl. Mater. Interfaces*, *Nanoscale*, *ACS Nano*, *ChemSusChem*, *J. Catal.*, *Chem. Eur. J.*, *Chem. Commun.*, *Catal. Sci. Technol.*, *ChemCatChem*, *React. Chem. Eng.*, *Catal. Commun.*, *Ind. Eng. Chem. Res.*, etc. (**>20 papers/year**)

ACQUIRED THIRD-PARTY FUNDING

Over the past five years, I have secured over **€6 million** in competitive research grants. The funding comes from **public institutions** (European Commission, Italian Ministry of University and Research), **pharmaceutical companies** (Bayer, Versalis, Procos, and Bracco Imaging), and **private foundations** (Fondazione Bracco and Fondazione Cariplo).

2025 - today "PRIME LEAP: Next-generation intensified chemical processes integrating plasma and single-atom catalysis", MSCA Doctoral Network (with coordination of the ITN project), European Commission, **€ 2'978'079** (of this, **€ 845'265** go to my lab at POLIMI) (Role: **International Competitive Call**. **Coordinator and Principal Investigator**).

2025 - today "Continuous-flow manufacturing of a phenol from aniline", Bayer Crop Science, **€ 25'000** (Role: **Principal Investigator**).

2024 - today "CATSYNEX: Harnessing the market potential of single-atom catalysts through next-generation large-scale synthesis" (**ERC PoC 2024**), European Commission, **€ 150'000** (of this, **€ 120'000** go to my lab at POLIMI) (Role: **International Competitive Call**. **Coordinator and Principal Investigator**).

2024 - today "FLOWCAT: Twinning for building excellence and innovation solutions in flow catalysis", European Commission, **€ 159'875** (Role: **International Competitive Call**. **Partner**).

2024 - today "MERGE: Twinning excellence in management and research for green energy and chemicals using single-atom catalysis", European Commission, **€ 377'143** (Role: **International Competitive Call**. **Partner**).

2024 - today "SELMA: Single-atom catalysts for a new generation of chemical processes: from fundamental understanding to interface engineering", European Commission, Marie Skłodowska-Curie Individual Fellowships for Dr. Hushan Chand, **€ 172'750** (Role: **International Competitive Call**. **Coordinator and Principal Investigator**).

2024 - today "SOLCAT: Solid frustrated-Lewis pair single-atom catalysts for efficient photocatalytic amidation processes", European Commission, Marie Skłodowska-Curie Individual Fellowships for Dr. Theo Gazis, **€ 172'750** (Role: **International Competitive Call**. **Coordinator and Principal Investigator**).

2023 - today "SAC_2.0: Single-atom catalysts for a new generation of chemical processes: from fundamental understanding to interface engineering" (**ERC StG 2022**), European Commission, **€ 1'499'681** (Role: **International Competitive Call**. **Principal Investigator**).

2023 - today "UNDERSAC: Understanding the structure and reactivity of C_3N_4-based single-atom catalysts" (PRIN 2022), Italian Ministry of Education, **€ 220'400** (of this, **€ 72'400** go to my lab at POLIMI) (Role: **National Competitive Call**. **Coordinator and Principal Investigator**).

2023 - today "GreenDigiPharma: Green and digital pharmaceutical manufacturing", MSCA Doctoral Network (with coordination of the ITN project), European Commission, **€ 2'605'881.60** (of this, **€ 518'875** go to my lab at POLIMI) (Role: **International Competitive Call**. **Coordinator and Principal**

Investigator).

2023 - today "SACtoH_2: Rational design of single-atom catalysts for light-to-H_2 conversion" (PRIN PNRR 2022), Italian Ministry of Education, **€ 299'692** (of this, **€ 128'706** go to my lab at POLIMI) (Role: **National Competitive Call**. **Unit Leader**).

2023 - today "Photocatalytic recovery of iodine from iodinated waste using single-atom catalysts", Fondazione Cariplo – Economia Circolare, **€ 299'775** (of this, **€ 100'000** go to my lab at POLIMI) (Role: **International Competitive Call**. **Unit Leader**).

2023 - today "Conventional and alternative catalytic systems for the production of carboxylic acids from vegetable oils", ENI Versalis, **€ 198'000** (Role: **Principal Investigator**).

2022 - today "SACforCO2: Heterogeneous Single-Atom Catalysts for Carbon Dioxide Reduction to Chemicals", European Commission, Marie Skłodowska-Curie Individual Fellowships for Dr. Vitthal Saptal, **€ 188'590** (Role: **International Competitive Call**. **Coordinator and Principal Investigator**).

2022 - today "SusPharma: Merging Sustainable And Digital Chemical Technologiesfor The Development Of Greener-By-Design Pharmaceuticals", European Commission, **€ 6'897'657** (of this, **€ 1'018'125** go to my lab at POLIMI) (Role: **International Competitive Call**. **Principal Investigator**).

2021 - 2023 "SSEFR: Single-site electrocatalytic flow reactor for C-C coupling", European Commission, Marie Skłodowska-Curie Individual Fellowships for Dr. Mark Bajeda, **€ 171'473** (Role: **International Competitive Call**. **Coordinator and Principal Investigator**).

2021 - 2023 "Flow synthesis of pharmaceutical intermediates", Procos Pharmaceuticals Spa, **€ 5'000** (Role: **Principal Investigator**).

2020 - 2022 "Catalytic conversion of vegetable oil into synthetic fuels", ENI Versalis, **€ 180'000** (Role: Task leader).

2019 - 2023 "AFRICA: hArnessing the power of Flow chemistRy for the synthesIs of Complex phArmaceuticals", Fondazione Bracco, **€ 900'000** (Role: **International Competitive Call**. **Principal Investigator**).

2020 - 2021 "Heterogeneously-catalyzed continuous flow process for organic synthesis", Procos Pharmaceuticals Spa, **€ 10'000** (Role: **Principal Investigator**).

2020 - 2022 "Photocatalytic processes to recover iodine from wastewater", Bracco Imaging Spa, **€ 55'000** (Role: **Principal Investigator**).

2020 - 2022 "Flow chemistry for the synthesis of a new contrast agent", Bracco Imaging Spa, **€ 76'842** (Role: **Principal Investigator**).

2016 - 2019 "Engineering novel photocatalytic films for organic synthesis in flow reactors", Idorsia Pharmaceuticals, CHF 423'332 (ca. **€ 388'313**)

TEACHING AND MENTORING

2025 – today **Lecturer** - "Process System Engineering (Batch Processes)" (Graduate, 5 ECTS): Starting from May 2025.

2025 – today **Lecturer** - "Metal-Based Catalysis for Fine Chemicals" (PhD level, 3 CFU) (Starting from March 2025).

2023 - today **Lecturer** - "Continuous Manufacturing of Pharmaceuticals" (Graduate, 5 ECTS). (Student evaluation: Excellent)

2021 - today **Lecturer** - "Laboratory of Chemical Engineering Project" (Undergraduate, 8 ECTS).

2019 - 2022 **Lecturer** - "Flow Chemistry" (Graduate, 5 ECTS), Politecnico di Milano (Italy). (Student evaluation: Excellent)

2013 - 2016 **Teaching assistant** - "Catalysis Engineering" (Graduate, 8 ECTS), Institute for Chemical and Bioengineering, ETH Zurich (Switzerland)

2011 - 2015 **Lab instructor** - "Laboratory of Catalytic Materials" and "Laboratory of Flow Reactions", Chemical

Engineering Laboratory II (Graduate, 8 ECTS), Institute for Chemical and Bioengineering, ETH Zurich (Switzerland)

STUDENTS' SUPERVISION EXPERIENCE

Postdoctoral fellows:

Dr. Mark Bajada	Dr. Jody Albertazzi	Dr. Hushan Chand	Dr. Agustin De Arriba
Dr. Vitthal Saptal	Dr. Theo Gazis	Dr. Luis Cipriano	Dr. Jennifer Hong
Dr. Grazia Righetti	Dr. Xiufang He	Dr. Viktoriia Velicho	

PhD students:

Alessandra Sivo	Jiachengjun Luo	Mert Can Ince	Kaan Karaca
Vincenzo Ruta	Nicolò Allasia	Miguel De Vries	Ziqi Wang
Areti Mousiou	Milla Vigliengo	Shilpa Palit	

MSc thesis students:

Riccardo Gulminelli	Daniela Dardano	Enrico Annoscia	Moritz Haus
Letizia Rossi	Paola Piscioneri	Gabriele Musati	Michael Ehrenstein
Nathan Guy G. Husy	Giuseppe Marino	Eleonora Ruffini	David Grivel
Mario Scialdone	Edoardo V. Pasini	Francesco Iannacci	Patrick Dähler
Ilaria Montanari	Vittoria Granata	Matteo Vergani	Sarah Correa
Federica Romanelli	Martina Villa	Leonardo Mineo	Jonas Wichert
Alberto F. Ceravolo	Giuseppe Minerva	Massimiliano de Maron	Leonard Floryan
Giacomo Cassanego	Maria Suanno	Carola Romani	Jakub Jagielski
Chiara Bassano	Alessandro Manfredi	Lara Amini	