Curriculum Vitae et Studiorum

MATTEO PELUCCHI

1. Personal data and contacts

Name and Surname:	Matteo Pelucchi
Date of birth:	19th May 1988
City of birth:	Vaprio d'Adda (MI), Italia
Work address:	Department of Chemistry, Materials and Chemical Engineering "G. Natta", Politecnico di Milano, Piazza Leonardo Da Vinci 32, 20133 Milano (MI)
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Scopus Identifier:	56132024700
URL website:	https://tinyurl.com/58vfsr2d (institutional webpage)

2. Research Experience

2024 (Nov)- present	Associate Professor, Politecnico di Milano.
2021 (Nov)-2024 (Nov)	Tenure Track Assistant Professor, Politecnico di Milano.
2017 (Oct) -2021 (Oct)	Assistant Professor, Politecnico di Milano.
2016 (Nov) -2017 (Sep)	Post-doctoral researcher, Politecnico di Milano
2013 (Jun)-2013(Oct)	Research fellow, Politecnico di Milano

3. Education

2013 (Nov)-2016: Ph.D. (cum laude) in Industrial Chemistry and Chemical Engineering at Politecnico di Milano. Graduation Date: 15th February 2017. Supervisor: Prof. Tiziano Faravelli.

2010-2012: Master Degree (cum Laude) in Chemical Engineering at Politecnico di Milano. Graduation Date: 22nd April 2013.

2007-2010: Bachelor Degree in Chemical Engineering at Politecnico di Milano (101/110)

4. Awards and Grants

2023: National Scientific Habilitation to Full Professor in Chemical Engineering

2022: Distinguished Paper Award, "Reaction Kinetics" Session, 39th International Combustion Symposium. Maffei, L. P., Pelucchi, M., Faravelli, T., & Cavallotti, C. (2022). Theoretical kinetics of HO2+ C5H5: A missing piece in cyclopentadienyl radical oxidation reactions. Proceedings of the Combustion Institute.

2020: National Scientific Habilitation to Associate Professor in Chemical Engineering

2020: Front cover of *Reaction Chemistry and Engineering* associated to the paper titled "Theoretical study of sensitive reactions in phenol decomposition" L. Pratali Maffei et al.

2020: "Electronic Structure-based rate rules for H ipso addition-elimination reactions on mono-aromatic hydrocarbons with single and double OH/CH3/OCH3/CHO/C2H5 substituents: a systematic theoretical investigation" L. Pratali Maffei et al. *2020 HOT PCCP article* by the *Physical Chemistry Chemical Physics* Editors.

2019: Front cover of *Reaction Chemistry and Engineering* associated to the paper titled "Detailed kinetics of substituted phenolic species in pyrolysis bio-oils" Matteo Pelucchi et al.

2018: Front cover of *Physical Chemistry Chemical Physics* issue "Kinetics in the Real World" with the paper titled "H-Abstraction reactions by OH, HO_2, O, O_2 and benzyl radical addition to O_2 and their implications for kinetic modelling of toluene oxidation" Matteo Pelucchi et al.

2017: PhD Award, 2nd position. Politecnico di Milano.

2013-2016: PhD scholarship. Italian Ministry of Education (MIUR), Italy

2012-2013: Master Degree scholarship for thesis projects abroad – Politecnico di Milano

5. Visiting Positions

2022 (Dec)–2024 (Nov): Visiting professor at Tongji University (8th in China QS2022) School of Automotive Studies, Shanghai, China.

2016 (January-August): Visiting PhD candidate at Argonne National Laboratory, IL, USA. Chemical Science and Engineering Division. Supervisor: Dr. S.J. Klippenstein.

2015 (February) + 2013 (October): Visiting PhD Student at National University of Ireland Galway, School of Chemistry. Supervisor: Prof. H.J. Curran

2012 (March-September): Visiting Master Student at National University of Ireland Galway, School of Chemistry. Supervisor: Prof. H.J. Curran

6. Teaching Activities and Supervision

2023-Present: Lecturer of "*Thermochemical processes for carbon neutral energy transformation*" – 5 CFU. M.Sc. in Chemical Engineering

2021-Present: Lecturer of "*Laboratorio Progettuale di Ingegneria Chimica*" – 8 CFU. B.Sc. in Chemical Engineering.

2018-Present: Lecturer of "*Dynamics and Control of Chemical Processes*" – 5 CFU. M.Sc. in Chemical Engineering and Automation Engineering.

2013-2020: Teaching assistant

2020-Present: Supervision of 2 PhD students

Francesco Serse, 2020-present – MUR fellowship. Project: Development of theoretical protocols for the determination of a priori reaction rate constants in condensed phase and at the gas-solid interface with ab initio molecular dynamics.

Clarissa Giudici, 2021-present – Politecnico di Milano, Interdisciplinary PhD Fellowship – Project: Development of a modular and hierarchical modelling framework for the thermo-catalytic pyrolysis of methane for the production of carbon nanomaterials and hydrogen.

Co-supervisor of 2 PhD Student (L. Pratali Maffei, 2018-2022, R. Caraccio, 2023-2026)

Supervisor of >15 M.Sc. students (2021-24).

7. Institutional Activities

2023-Present: Secretary and Vice-coordinator of the Study Program in Chemical Engineering (B.Sc and M.Sc) and Industrial Safety and Risk Engineering (M.Sc), Politecnico di Milano

2021-present: Member of the Permanent Committee of the study programme in Chemical Engineering (B.Sc and M.Sc) and Industrial Safety and Risk Engineering (M.Sc), Politecnico di Milano.

2019-2022: Head of the Communication and Promotion committee of the Bachelor and Master program in Chemical Engineering.

2016-2023: OpenDay Organizer, B.Sc. and M.Sc. in Chemical Engineering. Orientation activity for high school students.

8. Invited Presentations, Lectures and Seminars

8th July 2015: Young Researchers Colloquium, Invited Presentation, Clean Air Conference 2015, Lisbon, Portugal *"Detailed kinetic mechanisms for practical applications: new reaction classes and model reduction"*.
20th January 2021: International Sooting Flames Workshop. Invited presentation, Adelaide, Australia, remote event. "*Reflections on PAH/Soot chemistry as raised from the 2020 Flame Chemistry Workshop: challenges and perspectives in theoretical and modeling efforts*"
21st-25th August 2022: 264th ACS National Meeting & Exposition. Division of Catalysis Science and Technology. Invited Presentation, Symposium: Chemical Deconstruction and Upcycling of Polymer Waste *"Kinetic modelling of SPW chemical recycling processes"*.
4th October 2022: PhD Seminar, Department of Chemical Engineering, Materials and Environment, Università di Roma "La Sapienza". *"Complex chemistry models for circular economy processes and decarbonization".*
28th October 2022: Winter School on Process Decarbonization and Energy Transition, GRICU-AIDIC (PhD and M.Sc. Students). *"Waste recovery and recycling by pyrolysis and gasification processes: state of the art, open issues and future directions"*.
27th June 2023: 12th International Conference on Chemical Kinetics, Hefei, China. "*A comprehensive chemical kinetics framework for carbon materials and turquoise hydrogen production from hydrocarbons pyrolysis.*"
3rd November 2023: 40Under40, E-lecture series on combustion. Belgian Section of the Combustion Institute. "*Chemistry models for the circular economy: plastic waste recycling and turquoise H2 and C production*"

9. Conferences and Workshops Organization

July 2027 "International Conference on Chemical Kinetics", Politecnico di Milano. Chairs: Carlo Cavallotti, Matteo Pelucchi.
20st - 21st July 2024: "Satellite workshop to the 40th International Symposium on Combustion". Coordinator of joint workshops organization. Politecnico di Milano, Italy.
21st July – 26th July 2024 *"40th International Symposium on Combustion".* Bid proposal and organizing committee member. Politecnico di Milano, Mi-Co Allianz Conference Center, Milan, Italy.
2022-present Chair of the *International Flame Chemistry Workshop.* 7th International Flame Chemistry Workshop, 20-21 July 2024, Milan, Italy.
30th August – 4th September 2020 *"XXIV International Conference on Chemical Reactors-CHEMREACTOR24".* Organizing committee member. Postponed to August 2021. Politecnico di Milano, Milan, Italy
7th May 2019, Chair of Mini-Symposium on "High Performance Computing: Towards High Throughput Kinetics and Combustion Model Development" Numerical Combustion Meeting. Aachen, Germany.
23rd-24th April 2018 *"Gas-phase Reaction Kinetics of Biofuels Oxygenated Molecules".* Organizing committee member. Politecnico di Milano, Milan, Italy
27th July 2018 *"Fourth International Rapid Compression Machine workshop"*. Technical committee member. Trinity College Dublin, Dublin, Ireland.

10. Participation as leader, PI, co-PI in Public and Industrial Research Projects

2025-2027: MSCA-DN "UPCYCLE: upscaling deep conversion routes for hard-to-recycle biogenic waste", Coordinator: Andrea Turolla, **Vice-coordinator: Matteo Pelucchi**, **Value: ~1000 k€**.

2024-2026: MSCA-PF "CYCLER: Understanding chemical recycling of solid plastic waste via theoretical approach", Post-doctoral Researcher: Cam-Tu Phan Dang **PI: Matteo Pelucchi**, **Value: 200 k€**.

2024-2026: Kavli Foundation and Carbon-Hub "Turquoise Hydrogen and C-materials production from methane cracking" PI: Matteo Pasquali (Rice University), **Co-PI** of working group on Reactor Design: Matteo Maestri, Mauro Bracconi, **Matteo Pelucchi**. **Value: 280 k€**.

2024-2026: Seal of Excellence MSCA-PF "CYCLER: Understanding chemical recycling of solid plastic waste via theoretical approach", Candidate: Cam-Tu Phan Dang **PI: Matteo Pelucchi**, **Value: 80 k€**. *replaced by MSCA-PF funding (see above).

2024: ISCRA-CINECA Class C Project. "PENTAGON: Pyrocarbon dEpositioN mechanisms and raTe constAnts determination for carbon materials and hydroGen prOductioN from catalytic and non-catalytic pyrolysis of methane". **Value: 2,2 MCore Hours**. **PI: Matteo Pelucchi**.

2024: **Industrial collaboration** "Modellazione della pirolisi termica di metano" Tenova. **Project Leaders:** Matteo Maestri, Mauro Bracconi, **Matteo Pelucchi**. **Value: 50 k€, Duration: 1 year.**

2023-2024: Polisocial Award 2022 "CHAR:ME – Biochar and biomass-derived products from waste as sustainable and safe domestic fuel". **Project Leaders:** Andrea Turolla, **Matteo Pelucchi**. **Value: 100 k€, Duration: 1.5 year.**

2023-2025: Research Project of National Interest – PRIN PNRR "HAMMER: Hydrogen and carbon black production from cracking in molten media". **Project Leader:** Benedetta De Caprariis (La Sapienza), Co-PI: Mauro Bracconi, **Matteo Pelucchi**. **Value: 170 k€, Duration: 2 years.**

2022-2024: **Industrial collaboration** "Mechanisitic analysis of carbon deposition in standard and rapid Carbon Vapor Infilitration conditions for the production of disk brakes and pads." Brembo SpA. **Project Leaders:** Alberto Cuoci and **Matteo Pelucchi**. **Value: 100 k€, Duration: 2 year.**

2021-2024: Interdisciplinary PhD Scholarship. Supervisor. **Value: ~75 k€. Duration: 3 years.**

2020-2023: Politecnico di Milano/Rice University "Carbon-Hub" **Project Leaders:** Matteo Maestri, **Matteo Pelucchi. Value: ~50 k€ (2020-2021), ~75 k€ (2021-2022). Duration: 1+1 year.**

2019-2020: **Industrial collaboration** "Reduction of Chlorine content from Municipal Solid Plastic Waste up to 5-10 ppm", Politecnico di Milano/ENI Spa. **PI**. **Value: ~250 k€. Duration: 6 months**.

11. Bibliometry

Scopus: Papers: 88, Citations: 3182, H-index: 28 (as of 16th December 2024)

https://www.scopus.com/authid/detail.uri?authorId=56132024700

12. Reviewing and Editorial activities

2023-Present

1. **Young Editorial Board Member** of Waste Disposal & Sustainable Energy, Springer. https://www.springer.com/journal/42768/
2. **Editorial Board Member of Applied Sciences "Applied Thermal Engineering"** Section, MDPI. https://www.mdpi.com/journal/applsci/sections/ATE

2021-2023

1. **Guest Editor**. Frontiers in Energy Research, Special Issue "European Combustion Meeting 2021": "Experimental and Modelling Approaches for Clean Combustion Technologies", Co-editor: Dr. Mario Commodo (CNR-STEM, Naples, Italy) and Prof. Maria Abian (University of Saragoza, Spain). 5 contributors. https://www.frontiersin.org/research-topics/20874/experimental-and-modelling-approaches-for-clean-combustion-technologies
2. **Volume Editor.** Advances in Chemical Engineering. Volume 60. Elsevier. "Towards circular economy: closing the loop with chemical recycling of Solid Plastic Waste". Matteo Pelucchi, Davide Moscatelli. Published November 2022. https://www.elsevier.com/books/towards-circular-economy-closing-the-loop-with-chemical-recycling-of-solid-plastic-waste/moscatelli/978-0-323-95770-0
3. **Volume Editor.** Advances in Chemical Engineering. Volume 61. Elsevier. "Turquoise hydrogen: an effective pathway to decarbonization and value added carbon materials". Matteo Pelucchi, Matteo Maestri. Published March 2023. https://www.sciencedirect.com/bookseries/advances-in-chemical-engineering/vol/61/suppl/C

2016-Present.

Reviewer for journals in the field of energy, combustion, chemical reaction engineering, chemical kinetics, physical chemistry, theoretical kinetics, renewable energy, physical chemistry, waste management and valorization:

Combustion and Flame, Fuel, Energy and Fuels, Physical Chemistry Chemical Physics, Reaction Chemistry and Engineering, RSC Advances, Proceedings of the Combustion Institute, Chemical Engineering Journal, Chemical Engineering Communications, Combustion Theory and Modelling, International Journal of Chemical Kinetics, International Journal of Hydrogen Energy, Journal of Physical Chemistry A, Biomass and Bioenergy, Waste Management, Carbon.