

FRANCESCO ROMAN ARTIOLI

Contact Information

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Research Interests

I am a second year Ph.D. student at Politecnico di Milano, affiliated with the Department of Chemistry, Materials, and Chemical Engineering Giulio Natta. My research takes place within the CRECK modeling laboratory and ICE group, under the supervision of Professor Alessandro Stagni and Professor Gianluca D'Errico. My Ph.D. work, CRECK side, centers on enhancing chemical kinetics models for predicting combustion and pyrolysis behaviors of complex fuels looking deeper in hydrogen carriers like ammonia. ICE side, the topic concerns the use of the kinetic mechanism developed in internal combustion systems to investigate the efficiency and potential emissions.

Experiences

Graduate Researcher, *Politecnico di Milano, Milano, Italy*

Oct. 2023-present

Advised by Prof. Alessandro Stagni, working on the development of chemical kinetics models for combustion and pyrolysis of hydrogen carriers fuels. Co-advised by Prof. Gianluca D'Errico on the application of reduced kinetic mechanisms in internal combustion engines.

Visiting M. Sc. Student, *TU Darmstadt, Darmstadt, Germany*

Feb. 2023-May 2023

Visiting M.Sc. student at Technische Universität of Darmstadt, under the guidance of Professor Arne Scholtissek and M.Sc. student Mich Johannes Michael. My research focuses on developing the topic of the Master thesis: combustion of iron particles.

Education

Ph.D., Chemical Engineering, *Politecnico di Milano, Milano, Italy*

2023-present

Dissertation Advisor: Prof. Alessandro Stagni

M.Sc., Chemical Engineering, *Politecnico di Milano, Milano, Italy*

2021-2023

Thesis Title: “Numerical modeling of the combustion of iron particles.” ([link](#)).

Thesis Advisors: Prof. Alessandro Stagni and Prof. Arne Scholtissek

Final Score: 110/110

B.Sc., Chemical Engineering, *Politecnico di Milano, Milano, Italy*

2018-2021

Final Score: 92/110

High School diploma, *Liceo Scientifico Belfiore, Mantova, Italy*

2013-2018

Final Score: 82/100

Publications

Refereed Publications

1. Alessandro Stagni, **Francesco Roman Artioli**, and Alessio Frassoldati. “The Role of Radiative Heat Loss and Collisional Energy Transfer in the Flammability Limits of NH₃ and NH₃-H₂ Mixtures”. In: *Industrial & Engineering Chemistry Research* 63.50 (2024), pp. 21805–21815. DOI: <https://doi.org/10.1021/acs.iecr.4c03276>.

Conferences and Presentations

Conferences

2. 3th Symposium on Ammonia Energy, Shanghai, China. Oral contribution, “*Flammability limits of Ammonia, and Ammonia-Hydrogen mixtures: key role of radiation and chemistry*”. **Artioli, F.R.**, Frassoldati, A., Stagni, A., 23-26 September 2024.
1. 46th Meeting of the Italian Section of the Combustion Institute, Bari, Italy. Oral contribution, “*Assessing the combustion behaviour of dimethyl ether and ammonia: a comparative study*”. **Artioli, F.R.**, Granata, L., Stagni, A., 2-5 June 2024.

Professional Activities, Outreach, and Service

Jobs

From the 2019 to 2023 in the summer period I worked at Centro Polisportivo Culturale “San Lazzaro” in Via della Certosa 9, Mantova. The type of employment was lifeguard. Activity and responsibility: management of swimming pools and lifeguards.

Interpersonal activities

Since the 2016 I was part of an AGESCI scout group in Mantova (MN7). In 2020, I started to be one of the heads starting with an age range of 7-11 years. In 2024, I passed to different ages (17-21).

Honors and Awards

PhD scholarship. Italian Ministry of Education (MIUR). Milano, Italy 2023

Teaching

Teacher assistant, *Politecnico di Milano*

Sperimentazione Industriale. Course given to undergraduate students in Chemical Engineering. Covering basis on the error theory and uncertainty of measurements and development of regressional models and their analysis. **A.Y. 24-25.**

Combustibili per la Transizione Energetica. Course given to undergraduate students in Chemical Engineering. Covering principles controlling the combustion processes and conversion of gaseous, liquid and solid fuels. **A.Y. 23-24, 24-25.**

Laboratorio Progettuale di Ingegneria Chimica. Course given to undergraduate students in Chemical Engineering. Covering fundamental aspects of modeling chemical process from first principles to industrial size plants. **A.Y. 23-24.**

Mentoring/Supervision

Master Students (Politecnico di Milano)

Giuseppe D'Amato, co-supervised with Prof. Alessandro Stagni.

Luca Granata, co-supervised with Prof. Alessandro Stagni. Thesis title: “Kinetic and fluid-dynamic study of ammonia-dimethyl ether mixtures as flexible energy carriers” ([link](#)).

Skills

Social

- Communication with people in the field of the management of swimming pools as a lifeguard in private center.
- Communication with different ages and relatives as an AGESCI scout head (Scout Group MN7).
- Communication in a multicultural environment during my experience in Germany.
- Capability to work in a team during projects for university's courses.

Organizational

- Management of other people in the work as lifeguard to achieve the duties (like cleaning of the swimming pools or control of the balneability of water).
- Coordination in the scout field to prepare activities and trips.
- Management of economical balances and assessments related to the scout field.

Technical

- Matlab, especially for chemical reactor design and data analysis (acquired while carrying out the many projects required for university exams).
- Office Package (general knowledge acquired during the years of studies).
- L^AT_EX language for reports and papers.
- Process simulator software such as Aspen HYSYS (acquired in different university courses).
- Instrumentations and machinery related to the management of swimming pools.
- Use of Python (especially for post-processing results of simulations).
- Use of OpenSMOKE++ for combustion simulations (framework developed internally in CRECK modeling group).
- Use of AED (mandatory for a lifeguard).

Additional Contact Links

Google Scholar

www.scholar.google.com

References

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