

# Marco Barozzi

*Curriculum Vitae*

## Personal data

**First name:** Marco

**Surname:** Barozzi

**Nationality:** Italian

**Social status:** not married

**ORCID:** <https://orcid.org/0000-0003-3511-7754>

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## Career summary

After my Bachelor's degree in Chemical Engineering and my M.Sc. degree in Safety and Prevention Engineering in the Process Industry (Politecnico of Milan), I started my research activity in 2015, with a fellowship dedicated to a study on emulsion polymerizations. I then continued my activity through a Ph.D. in Computational Mathematics at the University of Insubria (completed in 2019), where I kept working in the field of research of methods dedicated to the modeling and optimization of emulsion polymerizations and started a research project on predictive models for dust explosions. After my Ph.D. I carried out my research through fellowships and grants, focusing on the study of chemical processes, with increasing attention towards sustainability and safety. Over the course of my academic career, I co-authored about 40 M.Sc. and Bachelor thesis and provided support for academic courses at the University of Insubria. I'm currently working as a fixed-term researcher at the University of Insubria in the Department of Science and High Technology, within the research group dedicated to process safety and intensification.

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## Scientific topics

- Dust explosions
- Risk assessment
- Reaction chemistry
- Thermo-chemical stability of chemical reactions
- Pollutant dispersion
- Mathematical modeling

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## Academic positions and collaborations

### 2021-today

Fixed-term researcher type "a" (RUTDa), Department of Science and High technology, University of Insubria (via Valleggio 9, 22100, Como (CO), Italy).  
SC:09/D3, SSD: ING-IND 25

### 2021-today

Member of the research group Process Safety and Intensification. Department of Science and High technology, University of Insubria (via Valleggio 9, 22100, Como (CO), Italy)

2020-today

Collaboration with DEKRA Safety Italy. Main activities: vent sizing, risk assessment on chemical plants, Natech events.

2019-today

Collaboration with Risk Governance Solutions Srl. Main activities: pollutant dispersion simulations, compliance with D.Lgs 155/2010.

2019-oggi

Reviewer of the *Multidisciplinary Digital Publishing Institute (MDPI)*

2018-today

Reviewer of the *Process Safety and Environmental Protection Journal*

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## List of publications

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- Barozzi, M., Dimauro, C., Scotton, M.S., Copelli, S., *A Comprehensive Approach to Establish the Impact of Worksites Air Emissions*, Chemical Engineering, (2022), 91, pp. 151–156
- Scotton, M.S., Barozzi, M., Copelli, S., (2022) *Detailed Reconstruction and Safety Analysis of a Pre-Seveso Accident*, Chemical Engineering Transactions, 91, pp. 157–162
- Barozzi, M., Soffientini, L., Zanon, G., ...Scotton, M.S., Copelli, S., (2022), *Advantages of the Recursive Operability Analysis in Updating the Risk Assessment*, Chemical Engineering Transaction, 90, pp. 37–42
- Copelli, S., Petrucci, N.B., Florit, F., Barozzi, M., (2022), *Increasing Safety by Shifting Semi-Batch Polymerizations into Semi-Continuous Production*, Chemical Engineering Transactions, 90, pp. 601–606
- Scotton, M.S., Barozzi, M., Derudi, M., Copelli, S. (2022). *A Mathematical Model for the Prediction of the K<sub>ST</sub> for Metallic Dusts as a Function of the Particle Size Distribution*, Chemical Engineering Transactions, 2022, 90, pp. 487–492
- Barozzi, M., Scotton, M.S., Copelli, S., (2022), *Runaway Boundaries for PI Controlled Tubular Reactors*, Chemical Engineering Transactions, 90, pp. 583–588
- Barozzi M., Scotton M. S., Morosini C., Sieni E., Sgarbossa P., Sandon A., Copelli S., *Magnetically Separable Nanoparticles for Wastewater Treatment*, (2021) Chemical Engineering Transactions
- Scotton M. S., Barozzi M., Copelli S., *Recursive Operability Analysis as a tool for ATEX classification in plants managing explosive dusts*, (2021) Chemical Engineering Transactions
- Rota R., Copelli S., Scotton M. S., Barozzi M., Derudi M., (2021), *A practical tool for predicting the Minimum Ignition Energy of organic dusts*, Industrial & Engineering Chemistry Research, Vol. 60(29), 10807-10813
- Barozzi M., Contini S., Raboni M., Torretta V., Casson Moreno V., Copelli S., *Integration of Recursive Operability Analysis, FMECA and FTA for the Quantitative Risk Assessment in biogas plants: Role of procedural errors and components failures*, (2021) Journal of Loss Prevention in the Process Industries, Volume 71, 104468, ISSN 0950-4230
- Maestri, F., Copelli, S., Barozzi, M., Rota, R., *Kinetic-free discontinuous to continuous transformation of fine chemical reactions: A general experimental procedure*, (2020) Chemical Engineering Journal, 395, art. no. 125061
- Scotton, M.S., Barozzi, M., Derudi, M., Rota, R., Copelli, S. *Kinetic free mathematical model for the prediction of K<sub>ST</sub> values for organic dusts with arbitrary particle size distribution*, (2020) Journal of Loss Prevention in the Process Industries, 67, art. no. 104218
- Barozzi, M., Copelli, S., Scotton, M.S., Torretta, V. *Application of an enhanced version of recursive operability analysis for combustible dusts risk assessment*, (2020) International Journal of Environmental Research and Public Health, 17 (9), art. no. 3078
- Barozzi, M., Scotton, M.S., Derudi, M., Copelli, S., *Recursive operability analysis as a tool for risk assessment in plants managing metal dusts*, (2020) Chemical Engineering Transactions, 82, pp. 43-48.

- Copelli, S., Barozzi, M., Scotton, M.S., Fumagalli, A., Derudi, M., Rota, R. *A predictive model for the estimation of the deflagration index of organic dusts*, (2019) *Process Safety and Environmental Protection*, 126, pp. 329-338
- Barozzi, M., Ragazzi, M., Copelli, S., Torretta, V., Conti, F., Rada, E.C., Cioca, L.I., Rizzini, D., *Modelling the source term for pollutants generated from galvanic cells*, (2019) *Environmental Engineering and Management Journal*, 18 (4), pp. 907-920
- Copelli, S., Barozzi, M., Petrucci, N., Casson Moreno, V., *Modeling and process optimization of a full-scale emulsion polymerization reactor*, (2019) *Chemical Engineering Journal*, 358, pp. 1410-1420
- Copelli, S., Barozzi, M., Fumagalli, A., Derudi, M., *Application of a Gaussian model to simulate contaminants dispersion in industrial accidents*, (2019) *Chemical Engineering Transactions*, 77, pp. 799-804
- Copelli, S., Barozzi, M., Maestri, F., Rota, R., *Safe optimization of potentially runaway reactions: From fedbatch to continuous stirred tank type reactor*, (2018) *Journal of Loss Prevention in the Process Industries*, 55, pp. 289-302
- Copelli, S., Dente, M., Bozzano, G., Barozzi, M., *Simplified modeling and main constitutive parameters estimation for industrial emulsion copolymerization processes*, (2018) *Chemical Engineering Journal*, 335, pp. 988-1003
- Copelli, S., Barozzi, M., Maestri, F., Rota, R., *Safe intensification of potentially runaway reactions: From semibatch to continuous processes*, (2017) *Chemical Engineering Transactions*, 57, pp. 1687-1692
- Copelli, S., Croci, S., Fumagalli, A., Derudi, M., Rota, R., Barozzi, M., *Runaway problems in unsteady state tubular reactors*, (2016) *Chemical Engineering Transactions*, 53, pp. 85-90

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## Attendance at conferences and seminars

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### 2022- GRICU (Ischia, IT)

Poster: *Experimental Study on VOCs Production during High Monomer Content Emulsion Polymerizations*

### 2022- ISHPMIE (Braunschweig, DE)

Speaker: *Learning From the Past: The Importance of Risk Assessment in Aluminium Dust Processes*

### 2022- Loss Prevention 17 (Prague, CZ)

Speaker: *A comprehensive approach to establish the impact of worksite air emissions*

### 2022 – CISAP 10

Speaker: *A comprehensive approach to establish the impact of worksite air emissions*

### 2021, 28 Jun – API (Villa Toeplitz, Varese, IT)

Speaker: *2009. Explosion and Fire in a Resin Manufacturing Site*

### 2021, 23-26 May – ICHEAP 15 (virtual conference)

Speaker: *Magnetically Separable Nanoparticles for Wastewater Treatment*

Chairman of the session *Separation technology and transfer*

2019, 16-19 Jun – Loss Prevention 16 (Delft, NL)

Speaker: *Application of a Gaussian model to simulate contaminants dispersion in industrial accidents*

2019, 30 Jun -3 Jul – GRICU 2019 (Palermo, IT)

Poster: *Valutazione del Rischio e della Sostenibilità di un Impianto a Biogas mediante Analisi di Operabilità Ricorsiva Avanzata*

2019, 7 May – Convegno di Calorimetria (32° edizione) (Milan, IT)

2018, 13-14 Dec – MMCEB 2018 (Villa Toeplitz, Varese, IT)

Speaker: *Simulation of Runaway Phenomena in Controlled Plug Flow Reactors*

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## **Past research activities**

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2021-2022

Research grant: *Adattamento di procedure di analisi di rischio per la valutazione specifica di eventi NaTech*, University of Insubria, Department of Science and High Technology (Italy)

2020-2021

Fellowship: *Intensificazione di Processi di Polimerizzazione in Emulsione ad Elevata Viscosità: Passaggio della Modalità di Sintesi da Discontinua a Continua in Reattori Tubolari*, University of Insubria, Department of Science and High Technology (Italy)

2018-2020

Fellowship: *Studio dell'impatto degli effetti diffusivi radiali all'interno di reattori tubolari*, University of Insubria, Department of Science and High Technology (Italy)

2015

Fellowship: *Ottimizzazione, scale-up ed analisi di rischio di processi di polimerizzazione in emulsione ed emulsione*, University of Insubria, Department of Science and High Technology (Italy)

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## **Education**

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2018

PhD in Computer Science and Computational Mathematics (XXXI Cycle)  
University of Insubria, Como (Italy)  
PhD Thesis: *Application of Method of Lines in Chemical Engineering problems.*

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2014

M.Sc. in Safety and Prevention Engineering in Process Industry (LM-26),  
Polytechnic University of Milan, Milan (Italy)

Grade 110/110

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2011

Degree in Chemical Engineering  
Polytechnic University of Milan, Milan (Italy)  
Grade 110/110

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2008

High School Diploma: *Liceo Scientifico progetto Brocca*, Liceo Scientifico Vittorio Sereni (Luino (VA) - Italy)  
Grade 93/100

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### Awards

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2022

Top reviewer 2021 for the Process Safety and Environmental Protection Journal

11/5/2011

Honor student "Giuseppe Biardi", Polytechnic University of Milan

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### Courses

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2022-2023

*Inquinamento e trattamento dell'aria (Pollution and air treatment)* (ING-IND 25), Second cycle degree in "Ingegneria per l'ambiente e sostenibilità dei luoghi di lavoro", University of Insubria, Varese (Italy).

*Analisi e controllo dei processi chimici* (ING-IND 25), bachelor degree in "Chimica e chimica industriale", University of Insubria, Como (Italy).

2021-2022

*Inquinamento e trattamento dell'aria (Pollution and air treatment)* (ING-IND 25), Second cycle degree in "Ingegneria per l'ambiente e sostenibilità dei luoghi di lavoro", University of Insubria, Varese (Italy).

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### Supporting Teaching Experiences

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2021-2022

Integrative lessons and seminars for the course *Principles of industrial processes and plant safety* (ING-IND25), Second cycle degree in "Molecular and industrial biotechnology", University of Insubria, Varese (Italy).

Integrative lessons and seminars for the course *Ingegneria di sicurezza, affidabilità e sicurezza* (ING-IND25), bachelor degree in "Ingegneria per la sicurezza, lavoro e ambiente", University of Insubria, Varese (Italy).

## 2020-2021

Integrative lessons and seminars for the course *Principles of industrial processes and plant safety (ING-IND25)*, Second cycle degree in "Molecular and industrial biotechnology", University of Insubria, Varese (Italy).

Integrative lessons and seminars for the course *Ingegneria di sicurezza, affidabilità e sicurezza (ING-IND25)*, bachelor degree in "Ingegneria per la sicurezza, lavoro e ambiente", University of Insubria, Varese (Italy).

Integrative lessons and seminars for the course *Analisi e controllo dei processi chimici (ING-IND25)*, bachelor degree in "Chimica e chimica industriale", University of Insubria, Varese (Italy).

## 2019-2020

Integrative lessons and seminars for the course *Industrial process and principles of plant security regulation (ING-IND25)*, Second cycle degree in "Molecular and industrial biotechnology", University of Insubria, Varese (Italy).

Integrative lessons and seminars for the course *Ingegneria di sicurezza, affidabilità e sicurezza (ING-IND25)*, bachelor degree in "Ingegneria per la sicurezza, lavoro e ambiente", University of Insubria, Varese (Italy).

## 2017-2018

Tutoring for the course *Analisi A*, Degree in "Ingegneria Sicurezza Lavoro e Ambiente", University of Insubria, Varese (Italy).

Tutoring for the course *Analisi B*, Degree in "Ingegneria Sicurezza Lavoro e Ambiente", University of Insubria, Varese (Italy).

## 2016-2017

Tutoring for the course *Analisi A*, Degree in "Ingegneria Sicurezza Lavoro e Ambiente", University of Insubria, Varese (Italy).

Tutoring for the course *Analisi B*, Degree in "Ingegneria Sicurezza Lavoro e Ambiente", University of Insubria, Varese (Italy).

## 2015-2016

Tutoring for the course *Analisi B*, Degree in "Ingegneria Sicurezza Lavoro e Ambiente", University of Insubria, Varese (Italy).

Tutoring for the course *Affidabilità e Sicurezza nell'Industria di Processo*, Degree in Chemical Engineering, Polytechnic University of Milan

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## Language skills

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**Italian:** Mother tongue

**English:** UK, TOEFL Certificate Grade 89/120

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## Software skills

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**Microsoft package**  
**MATLAB**  
**CALPUFF**  
**latex**

*Autorizzo il trattamento dei miei dati personali presenti nel cv ai sensi dell'art. 13 del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali" e dell'art. 13 del GDPR (Regolamento UE 2016/679).*

28/9/2022

*Marco D'Amico*