

# CURRICULUM VITAE

## PERSONAL DETAILS

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**Name:** Chiara  
**Surname:** Bufalini  
**Nationality:** Italian

## EDUCATION

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*November 2021 – In progress* Ph.D Student in Civil, Chemical and Environmental Engineering, Curriculum: Chemical, Materials and Process Engineering, XXXVII cycle, Department of Civil, Chemical and Environmental Engineering of the University of Genoa, Italy.  
Major field of study: delivery system, encapsulation techniques, emulsion, microorganisms stabilizations.

*November 2021* Government exam and licensed as a professional industrial engineer (Genoa, Italy).

*September 2019 – October 2021* Master's degree in Chemical and Process Engineering.  
Experimental thesis in "Study and characterization of microbial strains in liquid formulation". Company internship at C.C.S. Aosta s.r.l. and internship at the Food Engineering Lab of DICCA of the University of Genoa.  
Grade: 110/110 cum laude.

*September 2016 – September 2019* Bachelor's Degree in Chemical and Process Engineering.  
Experimental thesis in "Production of zein nanoparticles for the stabilization of *Hibiscus sabdariffa* extracts". Internship within Food Engineering Lab of DICCA of the University of Genoa.  
Grade: 110/110 cum laude

*2011 - 2016* Scientific high school diploma "G.D. Cassini.", Genoa, Italy.

## TEACHING ACTIVITIES

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*March 2024 – June 2024* Teaching support activities to the course of "Progettazione di impianti chimici", held by Prof. Roberta Campardelli, for the Master's degree in Chemical and Processes Engineering. Department of Civil, Chemical and Environmental Engineering, Polytechnic School, University of Genova, Italy.

*September 2023 – December 2023* Teaching support activities to the course of "Operazioni unitarie e loro dimensionamento", held by Prof. Roberta Campardelli, for the Bachelor's degree in Chemical and Processes Engineering. Department of Civil, Chemical and Environmental Engineering, Polytechnic School, University of Genova, Italy.

*September 2022 – September 2023* Subject expert for the course of "Operazioni unitarie e loro dimensionamento", held by Prof. Roberta Campardelli, for the Bachelor's degree in Chemical and Processes Engineering. Department of Civil, Chemical and Environmental Engineering, Polytechnic School, University of Genova, Italy.

October 2022 – December 2022 Voluntary activity of teaching support for the course of “Operazioni unitarie e loro dimensionamento”, held by Prof. Roberta Campardelli, for the Bachelor’s degree in Chemical and Processes Engineering. Department of Civil, Chemical and Environmental Engineering, Polytechnic School, University of Genova, Italy.

## ACADEMIC COLLABORATION

*From June 2024 – In progress* Collaboration with Prof. Giuseppe Firpo for permeability study of polymeric film for active food packaging and microfluidic chip production. Department of Physics of the University of Genoa, Italy.

*From October 2023 – In progress* Collaboration with Prof. Jan Pralits for the develop of a predictive model for the droplets size of emulsion and polymeric particles. Department of Civil, Chemical and Environmental Engineering of the University of Genoa, Italy.

## PROJECT

*From October 2023 – In progress* Member of the working group for the project “Vacuum monitoring system” in collaboration with Sanitrade. The project aims to create a system capable of remotely monitoring the operations of vacuum systems on board ships. The activity was carried out at the Department of Civil, Chemical and Environmental Engineering of the University of Genoa. Technical-scientific manager: prof. Patrizia Perego.

*From September 2023 – In progress* Participating member of PRIN project “From natural source to food packaging by Innovative green processes (GREEN\_PACK)”

*From 2022 – In progress* Member of the working group for the development of innovative products in the field of symbiotic agriculture for the research activity carried out from BEST s.r.l. (Genoa, Italy).

2022 Member of the working group for research contract with TICASS for a H2020 Project on “Bio-based plastic packaging”. The project aimed at investigating the chemical-physical properties of biodegradable plastic materials, in particular PLA for food packaging sector. These materials were tested into different food simulants and under various contact times and controlled exposure temperatures, stipulated by the specific EU Regulations. The activity was carried out at the Department of Civil, Chemical and Environmental Engineering of the University of Genoa. Technical-scientific manager: prof. Patrizia Perego.

2021 – 2022 Member of the working group for the research contract with the company Piovan S.p.A. The activity was carried out at the Department of Civil, Chemical and Environmental Engineering of the University of Genoa. Technical-scientific manager: prof. Patrizia Perego.

## RESEARCH PERIOD AT NATIONAL AND INTERNATIONAL UNIVERSITY

*15 January 2024 – 22 March 2024* Research periods at the Ecole Polytechnique, with the research group of Laboratoire d’Hydrodynamique with Prof. Charles Baroud and Prof. Gabriel Amselem. The research focused on the study and optimization of microfluidic apparatus for droplets production. Ecole Polytechnique, Palaiseau, France.

*20 June 2022 – 1 July 2022* Research periods at the University of Salerno, with the research group of Supercritical Fluid Plants of Prof. Ernesto Reverchon. The research focused on the production of polymeric particles with the supercritical emulsion extraction plant. Department of Industrial Engineering, University of Salerno, Italy.

## PUBLICATIONS

- Pier Francesco Ferrari, Paolo Trucillo, Giulia De Negri Atanasio, **Chiara Bufalini**, Roberta Campardelli, Patrizia Perego, Domenico Palombo, Ernesto Reverchon, “Operating Parameters Optimization for the Production of Liposomes Loaded with Antibodies Using a Supercritical Fluid-Assisted Process”. *Processes* (2023), 11(3). Doi: <https://doi.org/10.3390/pr11030663>.
- **Chiara Bufalini**, Ida Palazzo, Alessandro Alberto Casazza, Pier Francesco Ferrari, Roberta Campardelli, Giuseppe Firpo, Patrizia Perego, Ernesto Reverchon, “Encapsulation of *Arthrospira platensis* polyphenolic extract using supercritical emulsion-based process”. *The Journal of Supercritical Fluids* (2024), 212. Doi: <https://doi.org/10.1016/j.supflu.2024.106335>.

## SUBMITTED PUBLICATIONS

- Pier Francesco Ferrari, **Chiara Bufalini**, Roberta Campardelli, Anna Brondolo, Enrico Ercole, Domenico Palombo, Patrizia Perego, “Stabilization of microbial strains in double long-lasting emulsions as a new strategy for liquid biofertilizers formulation”. Submitted to *Food and Bioproducts Processing*.

## POSTERS AND ORAL PRESENTATIONS IN NATIONAL AND INTERNATIONAL CONGRESSES

- **Chiara Bufalini**, Roberta Campardelli. Innovation in probiotic encapsulation strategies using emulsion based techniques. Presented as oral presentation at 27<sup>th</sup> International Congress of Chemical and Process Engineering CHISA 2024, Prague, Czech Republic, 25 -29 August 2024.
- Pier Francesco Ferrari, **Chiara Bufalini**, Roberta Campardelli, Giovanni Pratesi, Patrizia Perego, Domenico Palombo. Engineered polymeric nanoparticles for vascular drug delivery. 72<sup>nd</sup> International Congress of the European Society for CardioVascular and Endovascular Surgery, Istanbul, Turkey, 25-28 May 2024.
- **Chiara Bufalini**, Roberta Campardelli, Pier Francesco Ferrari, Domenico Palombo, Patrizia Perego. Development of an innovative liquid biofertilizer for symbiotic agriculture. Presented as oral presentation at AIV – XXVI Conference, Roma, Italy, 07-10 November 2023.
- **Chiara Bufalini**, Ida Palazzo, Alessandro Alberto Casazza, Pier Francesco Ferrari, Roberta Campardelli, Giuseppe Firpo, Patrizia Perego, Ernesto Reverchon. The potential of supercritical emulsion extraction for the encapsulation of *Arthrospira platensis* polyphenolic extract. Presented as oral presentation at 19<sup>th</sup> European Meeting on Supercritical Fluids (EMSF2023), Budapest, Hungary, 21-24 May 2023.
- **Chiara Bufalini**, Roberta Campardelli, Pier Francesco Ferrari, Domenico Palombo, Patrizia Perego. Stabilization and characterization of microbial strains in liquid formulation. Presented as poster at the Conference GRICU 2022 “Centralità dell’Ingegneria Chimica in un mondo che cambia”, Ischia, Italy, 3-6 July 2022.

## ATTENDANCE AT CONGRESSES AND SUMMER SCHOOL

- 27<sup>th</sup> International Congress of Chemical and Process Engineering CHISA 2024, Prague, Czech Republic, 25 - 29 August 2024.
- AIV – XXVI Conference, Roma, Italy, 07-10 November 2023.
- 19<sup>th</sup> European Meeting on Supercritical Fluids (EMSF2023), Budapest, Hungary, 21-24 May 2023.
- Ph.D National School of IPTA 2022 on the topic “Ingegneria di prodotto per la transizione alimentare”, Como, Italy, 8<sup>th</sup> -10<sup>th</sup> September 2022.
- Conference GRICU 2022 “Centralità dell’Ingegneria Chimica in un mondo che cambia”, Ischia, Italy, 3-6 July 2022.
- Ph.D. National School of GRICU 2022 (Group of Chemical Engineering of the University) on the topic “Fondamenti dei Processi di Elettrochimica e loro Applicazione”, Ischia, Italy, 6-9 July, 2022.

## ATTENDANCE AT WORKSHOP AND SEMINARS

- Participation to the Workshop “Safety and resilience: challenges within the context of pandemics: experiences from industry and healthcare”, Genoa, Italy, 12th April 2024.
- Participation to the International Workshop “Catalysis for carbon neutrality and energy transition”, Genoa, Italy, 13th June 2023.
- Participation to the Seminar in “Study on hypoglycemic mechanism of Red Bayberry pomace polyphenols in vitro and in vivo” held by Prof. Chenggang Cai, Genoa, Italy, 21st April 2023.
- Participation to the Seminar in “Treatment and resources utilization of agriculture and food waste” held by Prof. Chenggang Cai, Genoa, Italy, 19th April 2023.

- Participation to the Seminar in “Introduction to the human gut microbiota and probiotics” held by Prof. Chenggang Cai, Genoa, Italy, 12th April 2023.
- Participation to the Workshop “Approccio alla valutazione dinamica del Rischio nel contesto industriale ed in aree portuali: Innovazione e Ricerca”, Genoa, Italy, 10th March 2023.
- Participation to the Seminar in “La ricerca scientifica transdisciplinare diventa prodotto” held by Prof. Pier Francesco Ferrari, Genoa, Italy, 24th February 2023.
- Participation to the Workshop “MeOH come vettore energetico”, Genoa, Italy, 18th January 2023.
- Participation to the Seminar in “When zebrafish met engineering” held by Prof. Maurizio Porfiri, DICCA Seminar Series 2022, Genoa, Italy, 10th June 2022.
- Participation to the Seminar in “Tissue biomechanics in myopia quantified by unconfined compression testing” held by Prof. Ross Ethier, DICCA Seminar Series 2022, Genoa, Italy, 01st June 2022.
- Participation to the Seminar in “Ceramic Materials and the Energy Transition” held by Prof. Alessandra Sanson, DICCA Seminar Series 2022, Genoa, Italy, 27th May 2022.
- Participation to the Seminar in “3D, Unsteady, Non stationary, non Gaussian wind fields and their effects” held by Prof. Horia Hangan, DICCA Seminar Series 2022, Genoa, Italy, 13th May 2022.
- Participation to the Seminar in “Il linguaggio specialistico in letteratura, o del come suona la parola tecnica” held by Prof. Veronica Galletta, DICCA Seminar Series 2022, Genoa, Italy, 22nd April 2022.
- Participation to the Seminar in “Additive Manufacturing. A world full of opportunities and challenges!!” held by Prof. Ferdinando Auricchio, DICCA Seminar Series 2022, Genoa, Italy, 08th April 2022.
- Participation to the Seminar in “Discover and share the digital environmental value by geo-ai challenges” held by Prof. Eva Savina Malinverni, DICCA Seminar Series 2022, Genoa, Italy, 18th March 2022.
- Participation to the Seminar in “The IPCC report and sea level change” held by Prof. Aimée Slangen, DICCA Seminar Series 2022, Genoa, Italy, 25th February 2022.
- Participation to the Seminar in “Slow dynamics and fluctuation-dissipation concepts for structural health monitoring” held by Prof. Philippe Guéguen, DICCA Seminar Series 2022, Genoa, Italy, 09th February 2022.

### THESIS SUPERVISIONAS CO-ADVISOR

- Francesco Saja. “Stabilizzazione e caratterizzazione di ceppi microbici in formulazione liquida”, 2022, Bachelor’s Degree in Chemical and Processes Engineering, Department of Civil, Chemical and Environmental, University of Genoa.
- Lucrezia Lodi. “Optimization and characterization of double emulsion systems for microbial encapsulation and stabilization”, 2023, Master’s Degree in Chemical and Process Engineering, Department of Civil, Chemical and Environmental Engineering, University of Genoa.
- Camilla Ruotolo. “Nanosystems for targeted drug delivery: monoclonal antibodies encapsulation and surface engineering of polymeric particles”, 2024, Master’s Degree in Chemical and Process Engineering, Department of Civil, Chemical and Environmental Engineering, University of Genoa.

### SKILLS & COMPETENCES

- Fluent in English with B2 level in conversation, listening, reading and writing.
- Excellent organizational skills and ability to organize and respect the deadlines.
- Excellent team working skills.
- Ability in the use of laboratory equipment and chemicals.
- Excellent ability to use the Office package.
- Intermediate knowledge of software: Matlab, Simulink, Comsol, Aspen Plus.
- Programming skills in C language: basic level.
- Basic ability to use UniSim, SimaPro, Ansys Fluent, CAD 2D Microstation.

### FURTHER INFORMATION

- European driving license, class B.
- I gave presentation and guides to the laboratories of DICCA, Genoa, for the orientation program offered to high school students.
- Achievement of a lifeguard license with related summer work experience in 2014.

*In compliance with the law D.LGS. no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document.*