

Barbara Bosio

Associate professor

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Education and training

2000

PhD in Chemical Engineering

Development of Fuel Cell Technologies

Politecnico di Torino - consortium with UNIGE and POLIMI - Torino - IT

1996

Master degree in Chemical Engineering

Modelling and Numerical Evaluation of the Equilibrium and Precipitation

Conditions of Mercury in Aqueous Solutions in the Presence of Complex

Reactions and Adsorption Phenomena - 110/110 e lode

Università di Genova - Genova - IT

1990

High school diploma (classical studies)

60/60

Liceo Classico C. Colombo - Genova - IT

Academic experience

2011 - ONGOING

Associate Professor of Principles of Chemical Engineering

Univeristà di Genova - Genova - IT

2008 - 2012

Contracted Professor

Università di Trento - Trento - IT

1996 - 2011

Contracted Researcher

Università di Genova - Genova

Teaching activity

Main teachings from 2011:

- Principles of Chemical Engineering 1, Mod. 1: Transport Phenomena at the Macroscopic Level

- Principles of Chemical Engineering 2, Mod. 2: Transport Phenomena at the Local Level

New teachings from 2018:

- Environmental Chemistry and Processes, Mod. 1: Fundamentals of Environmental Processes

- Industrial Processes and Products, Mod. 1: Renewable Energy Production

Previous teachings:

- Multiscale analysis and computer simulation of chemical processes (Genova, 2017-2018)

- Applications of Process Engineering (Genova, 2012-2013)

- Innovative Chemical Processes (Genova, 2011-2012)

- Principles of Chemical and Food Engineering (Trento, 2011-2012)

- Simulation of Fuel Cell Systems (Genova, 2009-2010)

- Principles of Environmental Engineering (Trento, 2008-2009)

- Heterogeneous Chemical Kinetics (Genova, 2006-2007).

Responsible of the first Double Degree in Chemical and Process Engineering at the University of Genoa, partner the University of Liège.

Tutor of around 10 master or bachelor theses per academic year.

Responsible of Erasmus Programs for studies with University of Edinburgh and Université de Liège.

Responsible of Erasmus Programs for traineeship with Technische Universität München, University College Cork, Arup Deutschland GmbH.

Postgraduate research and teaching activity

Supervision of PhD students, residents and post-doctoral fellows

Supervisor of the following Ph.D. students at UNIGE:

- *Emilio Audasso, Simulation of high temperature fuel cells, XXXIII ciclo;*

- *Bruno Conti, Solid Oxide Fuel Cells: numerical and experimental approaches, XXXI;*

- *Cristina Moliner, Valorisation of agricultural residues, XXVIII ciclo, double degree with Polytechnic University of Valencia (supervisor with Elisabetta Arato e Amparo Ribes);*

- *Nicola Di Giulio, Theoretical and experimental analysis of Molten Carbonate Fuel Cell performance in innovative applications, XXVI ciclo;*

- *Danilo Marra, Fluid-dynamic characterisation of molten carbonate fuel cells in plant optimisation, XX ciclo (supervisor with Elisabetta Arato);*

Co-supervisor of the following Ph.D. students at Facoltà di Scienze e Tecnologie della Libera Università di Bolzano (co-supervisor with Marco Baratieri, supervisor Elisabetta Arato):

- *Filippo Marchelli, Processes for Biomass Valorisation, XXXII ciclo;*

- *Dario Bove, Investigation on the biomass gasification in a spouted bed reactor pilot plant, XXIX ciclo.*

Responsible of the following contracted researchers at UNIGE:

- *Dario Bove, Detailed simulation of molten carbonate fuel cells, 2018;*

- *Massimo Curti, Valorisation of food and textile waste for the bio-char production, 2018;*

- *Max Romero Rivas, Sustainable and innovative processes for energy production from biomasses, 2012.*

PhD committees membership

- Civil, Chemical and Environmental Engineering, University of Genoa, 2013-today.

- Fluid-dynamics and Processes of Environmental Engineering, University of Genoa, 2013-2016.

Research interests

My main research activity is focused on the development of fuel cell technology for the clean production of energy.

At the same time, I am involved in associated research topics concerning carbon capture and transport, water and gas treatment, thermochemical processes like gasification and pyrolysis, re-use of agricultural, municipal and industrial waste for the productions of renewable goods and energy.

Key qualifications:

- The detailed simulation of chemical and electrochemical monolithic reactors
- The solution of problems related to equipment scale-up
- The theoretical and experimental analysis of transport phenomena in porous catalysts
- The steady-state and dynamic simulation of process plants
- The definition and execution of procedures for testing in laboratories or pilot-plants
- Experimental data analyses and estimation of kinetic and thermodynamic non-linear parameters
- Computer programming

Grants

2018 - ONGOING

BioChar

FILIDEA srl AGRINDUSTRIA TECCO srl ETG Risorse e Tecnologie srl - IT - IT

Principal investigator

Simulation of an innovative reactor for the production of biochar and syngas from agricultural and textile waste

2017 - ONGOING

Investigation of the phenomena occurring in Molten Carbonate Fuel Cells (MCFCs)

Exxon Mobil Research and Engineering - US - US

Principal investigator

The projects deals with the study of the phenomena which characterize the behavior of molten carbonate fuel cells; the planning of experimental campaigns devoted to a better understanding of the reaction mechanisms; the detailed simulation of performance and the proposal of optimized solutions

2017 - ONGOING

Peter on Board

Ministero delle Infrastrutture e dei Trasporti - IT - IT

Participant

Waste treatment on board of cruise ships to reduce environmental impact

2017 - ONGOING

LIBERNITRATE

European Commission

Participant

Responsible reduction of nitrates in the comprehensive water cycle