



Fiammetta Rita Bianchi

Education

2018–Ongoing

PhD student in Civil, Chemical and Environmental Engineering Curriculum: Chemical, Materials and Process Engineering

2016–2018

Master's Degree in Chemical and Process Engineering
(University of Genoa, IT)

Thesis: "*CO₂ adsorption on zeolite 13X: Lab-scale tests and mathematical simulation*"
Full marks with honors

2013–2016

Bachelor's Degree in Chemical Engineering
(University of Genoa, IT)

Thesis: "*Valorizzazione energetica di scarti tessili tramite gassificazione*"
Full marks with honors

2013

Scientific High School Graduation
(Liceo Statale E. Amaldi, Novi L. IT)
100/100

Training

2019

JESS SOFC-SOE
(Athens, GR)
"*Introduction to SOFC/SOE*"

2018

EMERSON
(Genova, IT)
"*Advanced Process Controls, HIPPS and SIS system tuning*"

Work experience

2012

Internship at veterinary clinic
(Clinica veterinaria Serravalle, IT)

Personal Skills

Mother tongue

Italian

Other languages

English
Level B2: First Certificate in English (FCE) in 2017

Digital skills

European Computer Driving Licence (ECDL) in 2012
Programming Language: C, Fortran, Matlab
Software: Aspen Plus and Aspen Custom Modeller, Matlab and Simulink, OriginLab, Office

Driving Licence: B

Research activity

My research focuses on green hydrogen and use of high temperature cells, above all Solid Oxide configuration. This technology is modelled basing on physicochemical

principles and conservation equations in order to detect cell performance and durability through a multiscale approach. The performed simulations are used for both Gas to Power (fuel cell operation) and Power to Gas (electrolysis mode) applications.

Publications and Conference Presentations

- Bianchi, F.R.; Bove, D.; Audasso, E.; Bosio, B.; Baldinelli, A.; Barelli, L.; Bidini, G.; Nobili, F.; Staffolani, A. *Electrochemical Modelling of Solid Oxide Fuel Cells*. European Fuel Cell Conference, December 2019, Naples (Poster).
- Audasso, E.; Bianchi, F.R.; Bove, D.; Bosio, B. *Detailed Modelling of Internal Reforming Fuel Cells for Process Analysis and Optimisation*. European Fuel Cell Conference, December 2019, Naples (Oral Presentation).
- Bianchi, F.R.; Bosio, B.; Baldinelli, A.; Barelli, L. *Optimization of a Reference Kinetic Model for Solid Oxide Fuel Cells*. *Catalysts* 2020, 10 (1), 104. <https://doi.org/10.3390/catal10010104>.
- Bianchi, F.R.; Spotorno, R.; Piccardo, P.; Bosio, B. *Solid Oxide Fuel Cell Performance Analysis through Local Modelling*. *Catalysts* 2020, 10 (5), 519. <https://doi.org/10.3390/catal10050519>.
- Audasso, E.; Bianchi, F.R.; Bosio, B. *2D Simulation for CH₄ Internal Reforming-SOFCs: An Approach to Study Performance Degradation and Optimization*. *Energies* 2020, 13 (16), 4116. <https://doi.org/10.3390/en13164116>.
- Bianchi, F.R.; Baldinelli, A.; Barelli, L.; Cinti, G.; Audasso, E.; Bosio, B. *Multiscale Modeling for Reversible Solid Oxide Cell Operation*. *Energies* 2020, 13 (19), 5058. <https://doi.org/10.3390/en13195058>.
- Bianchi, F.R.; Moreschi, L.; Gallo, M.; Vesce, E.; Del Borghi, A. *Environmental Analysis along the Supply Chain of Dark, Milk and White Chocolate: A Life Cycle Comparison*. *Int. J. Life Cycle Assess.* 2020. <https://doi.org/10.1007/s11367-020-01817-6>.
- Padinjarethil, A.K.; Bianchi, F.R.; Bosio, B.; Hagen, A. *Anode and electrolyte supported Solid Oxide Fuel Cells: experimentation and modelling*. European Fuel Cell Forum, October 2020, Online conference (Poster).
- Bianchi, F.R.; Bosio, B. *Operating Principles, Performance and Technology Readiness Level of Reversible Solid Oxide Cells*. *Sustainability* 2021, 13, 4777. <https://doi.org/10.3390/su13094777>

Teaching activity

Habilitation for High School Teaching (24 CFU EX D.M.616/2017)

Lecturer in the framework of Project ADIUVVA (ERASMUS + KA2) in A.Y. 2019-2020 and 2020-2021

Co-supervisors of following thesis:

- Delfino, S., “*Studio della cinetica elettrochimica di celle a combustibile a ossidi solidi su base teorica e sperimentale*”, 2019, Bachelor’s Degree in Chemical and Process Engineering.
- Cremente, L., “*CO₂ capture over adsorbent materials: validation on experimental data of a detailed model and its application for operating condition optimisation*”, 2019, Master’s Degree in Chemical and Process Engineering.
- Campodoni, M. “*Applicazione di celle elettrolitiche a ossidi solidi in sistemi di generazione di potenza da fonte eolica*”, 2020, Bachelor’s Degree in Civil and Environmental Engineering.
- Al Kharusi, R.A.A., “*Integration of reversible solid oxide cells with renewable energy sources: a 0D model in Aspen Custom Modeler*”, 2020, Meng Degree in Chemical Engineering.
- Accornero, S., “*Modellizzazione macroscopica di un sistema Power-to-Gas e Gas-to-Power basato su celle reversibili ad ossidi solidi e fonte eolica*”, 2020, Bachelor’s Degree in Chemical and Process Engineering.
- Emporio, B., “*Applicazione di celle elettrolitiche a ossidi solidi a generatori di potenza da fonte solare per la produzione di idrogeno*”, 2020, Bachelor’s Degree in Chemical and Process Engineering.
- Sarritzu, C., “*Produzione di idrogeno verde con celle a ossidi solidi: applicazione e stoccaggio a livello residenziale*”, 2021, Bachelor’s Degree in Chemical and Process Engineering.