

Dario Bove

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● WORK EXPERIENCE

01/07/2021 - 30/06/2022

RESEARCH FELLOW UNIVERSITY OF GENOA - DIPARTIMENTO DI INGEGNERIA CIVILE, CHIMICA E AMBIENTALE (DICCA)

The main objective of the research project is the experimental development of molten carbonate fuel cells: optimization of materials and production processes, performance tests and identification of kinetic parameters. The activity involves the fabrication and assembly of electrodes and matrices, as well as their electrochemical characterization by IV curve, EIS analysis and microstructural investigations. The project is part of a development plan in collaboration with a company and aimed at specific industries.

02/09/2018 - 02/09/2019

RESEARCH FELLOW UNIVERSITY OF GENOA - DIPARTIMENTO DI INGEGNERIA CIVILE, CHIMICA E AMBIENTALE (DICCA)

Molten Carbonate Fuel Cells (MCFCs) can simultaneously generate clean energy and segregate CO₂ from exhausts. To optimise performances in these specific operating conditions, a detailed MCFC model has been developed. Then, the model has been integrated in the software Aspen Plus for process simulation. For this reason and in order to compare different computational solutions, two codes has been set-up: in Fortran and in Aspen Modeler. The results have been validated on available experimental data.

01/04/2020 - 31/03/2021

RESEARCH FELLOW UNIVERSITY OF GENOA - DIPARTIMENTO DI INGEGNERIA CIVILE, CHIMICA E AMBIENTALE (DICCA)

The main objective of the research project has been the theoretical analysis of the performance of high temperature fuel and electrolytic cells and of the related degradation phenomena. The studio has been aimed at a modeling activity with different degrees of detail (from the electrode scale to the pile scale). The optimization of the models created (0D, 2D and 3D) has been carried out on the basis of an appropriate validation on the experimental data made available as part of the European Ad Astra project.

07/01/2014 - 25/07/2017

INVESTIGATION ON THE BIOMASS AND AGRICULTURAL RESIDUES THERMOCHEMICAL PROCESSES FREE UNIVERSITY OF BOZEN-BOLZANO (ITALY)

Development and preliminary tests on a square-based spouted bed gasifier at pilot scale (20 kWth). The novel plant is composed of: a squared-base spouted bed unit, a feeding system to regulate the biomass mass inflow, an air pump, a clean-up system. The start-up process has been optimized to reduce the time to achieve stationary conditions. Two different materials (wood pellet and residues from pruning of apple trees) have been tested at different feeding rates. The obtained outcomes represent one of the few available results in literature using a squared-based spouted bed reactor for the gasification of biomass at pilot scale.

01/09/2015 - 31/01/2016

PERIOD ABROAD AT INSTITUTE OF ENERGY PROCESS ENGINEERING, NÜRNBERG INSTITUTE OF ENERGY PROCESS ENGINEERING

Exchange of skills in the fields of thermochemical conversion of biogenic raw materials and CFD analysis of fluidized beds. In particular, cooperation has focused attention on energy and mass balances and CFD modeling of an innovative plasma biomass gasifier.

22/04/2013 - 02/08/2013

INTERNSHIP SILVATEAM ENERGIA S.R.L. (ITALY)

Development of potential solutions to increase the efficiency of extraction of tannin from chestnut wood. The proposed solutions are based on the idea of raising the temperature by injections of steam inside the autoclaves where the extraction takes place. Using Aspen Plus, the potential solutions were simulated and compared with the existing plant to optimize the position of the steam injections.

07/2010 - 07/2010

INTERNSHIP ENVIRO S.R.L.

Research and quality control of agricultural residues (in particular sunflower seeds, corn and rice shell) at the plant of production pellet in Mersin (Turkey) in order to determine the optimal pelletization factors. The achieved outcomes have been used to perform an experimental campaign at the operative plant.

● **EDUCATION AND TRAINING**

06/01/2014 - 25/07/2017

PHD IN SUSTAINABLE ENERGY AND TECHNOLOGIES Free University of Bolzano (Italy)

Title of dissertation: Investigation on the biomass gasification in a spouted bed reactor pilot plant.

26/06/2015

MEMBER OF "CERTIFICATORE ENERGETICO DELLA REGIONE LIGURIA"

Identification number 7164

23/02/2015

MEMBER OF "ORDINE INGEGNERI GENOVA"

Identification number 10303A

09/2011 - 27/09/2013

MASTER DEGREE IN CHEMICAL ENGINEERING University of Genoa (Italy)

Average Grade: 29,05/30 - Degree score: 110/110 cum laude

Title of dissertation: Optimization study of the process of extraction of tannin from chestnut wood.

05/12/2012

GHG MANAGER JUNIOR

Accounting and reduction of greenhouse gas emissions according to the Emission Trading System (ETS). Course GHG Manager Junior, registered KHC (Know How Certification, n. R. E081).

● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	B2	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● DIGITAL SKILLS

Microsoft Office | Fortran | Comsol | Aspen Plus | Fluent | Matlab

● ADDITIONAL INFORMATION

PUBLICATIONS

Publications

- **Documents: 16**
- **Total Citations: 179**
- **H-index: 8**

Archetti, M., Audasso, E., Bosio, B., Bove, D.
High temperature fuel cells to reduce CO₂ emission in the maritime sector
(2022) E3S Web of Conferences, 334, art. no. 04013, .

Barckholtz, T.A., Elsen, H., Kalamaras, P.H., Kiss, G., Rosen, J., Bove, D., Audasso, E., Bosio, B.
Experimental and Modeling Investigation of CO₃=/OH- Equilibrium Effects on Molten Carbonate Fuel Cell Performance in Carbon Capture Applications
(2021) Frontiers in Energy Research, 9, art. no. 669761, .

Cooper, R., Bove, D., Audasso, E., Ferrari, M.C., Bosio, B.
A feasibility assessment of a retrofit Molten Carbonate Fuel Cell coal-fired plant for flue gas CO₂ segregation
(2021) International Journal of Hydrogen Energy, 46 (28), pp. 15024-15031.

Bove, D., Audasso, E., Barckholtz, T., Kiss, G., Rosen, J., Bosio, B.
Process analysis of molten carbonate fuel cells in carbon capture applications
(2021) International Journal of Hydrogen Energy, 46 (28), pp. 15032-15045.

Moliner, C., Bove, D., Arato, E.
Co-incineration of rice straw-wood pellets: A sustainable strategy for the valorisation of rice waste
(2020) Energies, 13 (21), art. no. 5750, .

Audasso, E., Emilio.audasso@gmail.com, Bosio, B., Bove, D., Arato, E., Barckholtz, T., Kiss, G., Rosen, J., Elsen, H., Blanco Gutierrez, R., Han, L., Geary, T., Willman, C., Hilmi, A., Yuh, C.Y., Ghezal-Ayagh, H.
The Effects of Gas Diffusion in Molten Carbonate Fuel Cells Working as Carbon Capture Devices
(2020) Journal of the Electrochemical Society, 167 (11), art. no. 114515, .

Audasso, E., Bosio, B., Bove, D., Arato, E., Barckholtz, T., Kiss, G., Rosen, J., Elsen, H., Gutierrez, R.B., Han, L., Geary, T., Willman, C., Hilmi, A., Yuh, C.Y., Ghezal-Ayagh, H.
New, Dual-Anion Mechanism for Molten Carbonate Fuel Cells Working as Carbon Capture Devices
(2020) Journal of the Electrochemical Society, 167 (8), art. no. 084504, .

Bosio, B., Bove, D., Guidetti, L., Avalle, L., Arato, E.
Numerical Simulation of the Heat Transfer in the Cryoprobe of an Innovative Apparatus for Cryosurgery
(2019) Journal of Biomechanical Engineering, 141 (1), art. no. 0110081, .

Bove, D., Moliner, C., Curti, M., Baratieri, M., Bosio, B., Rovero, G., Arato, E.
Preliminary tests for the thermo-chemical conversion of biomass in a spouted bed pilot plant
(2019) Canadian Journal of Chemical Engineering, 97 (1), pp. 59-66.

Marchelli, F., Bove, D., Moliner, C., Bosio, B., Arato, E.
Discrete element method for the prediction of the onset velocity in a spouted bed
(2017) Powder Technology, 321, pp. 119-131.

Bove, D., Moliner, C., Curti, M., Rovero, G., Arato, E., Bosio, S.
Modelling and validation with experimental data of the fluid-dynamic behaviour of a spouted bed facility for the gasification of agricultural residues
(2016) 22nd International Congress of Chemical and Process Engineering, CHISA 2016 and 19th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction, PRES 2016, 2, p. 1255.

Moliner, C., Bove, D., Bosio, B., Ribes, A., Arato, E.
Simulation activities for the pseudo-equilibrium modelling of the gasification of agricultural residues
(2016) European Biomass Conference and Exhibition Proceedings, 2016 (24thEUBCE), pp. 934-940.

Bove, D., Moliner, C., Curti, M., Rovero, G., Baratieri, M., Bosio, B., Arato, E., Garbarino, G., Marchelli, F.
Experimental studies on the gasification of the residues from prune of apple trees with a spouted bed reactor
(2016) European Biomass Conference and Exhibition Proceedings, 2016 (24thEUBCE), pp. 858-862.

Bove, D., Moliner, C., Baratieri, M., Bosio, B., Arato, E.
Kinetic characterization of the residues from the pruning of apple trees for their use as energy vectors
(2016) Chemical Engineering Transactions, 50, pp. 1-6.

Bove, D., Merello, S., Frumento, D., Arni, S.A., Aliakbarian, B., Converti, A.
A Critical Review of Biological Processes and Technologies for Landfill Leachate Treatment
(2015) Chemical Engineering and Technology, 38 (12), pp. 2115-2126.

Bove, D., Moliner, C., Bosio, B., Arato, E., Curti, M., Rovero, G.
CFD simulations of a square-based spouted bed reactor and validation with experimental tests using rice straw as feedstock
(2015) Chemical Engineering Transactions, 43, pp. 1363-1368.

HONOURS AND AWARDS

Honours and awards Finalist at "**Intel Business Challenge 2014 Europe Finals**" in Vilnius (Lithuania) with a project about gasification of agricultural residues. (<http://www.intelchallenge.eu>)

Honours and awards Finalist at "**Best 10 participants in EIT ICT Labs Idea Challenge 2014**" in Berlin (Germany) with a project about gasification of agricultural residues. (<http://ideachallenge.eitictlabs.eu/>)

ORGANISATIONAL SKILLS

Organisational skills Good management skills. At present I hold the position of treasurer at Amateur Sporting Association.

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills Ability to work in a team situation gained in study and work

Autorizzo il trattamento dei miei dati personali ai sensi del Dlgs 196 del 30 giugno 2003 e dell'art. 13 GDPR

29/05/2023

