

MMATTEO MOGLIE

EDUCATION

UNIVERSITÀ POLITECNICA DELLE MARCHE Ancona, Italy
Ph.D in Energetics January 2011
Thesis: *Biodiesel and microalgae: energy for a sustainable future*

UNIVERSITÀ POLITECNICA DELLE MARCHE Ancona, Italy
Master Degree in Mechanical Engineering July 2007
Thesis: *A techno-economic analysis of biomass gasification – solid oxide fuel cell systems.*

AWARDS AND HONORS

Green Oscar Marche - "Sustainability category", (Coldiretti Marche), 2019

Highly Cited Award Review Paper 2012 to 2013, (Applied Energy), 2013

EN.FA.Si Project, (Rotary International), 2009

TEACHING EXPERIENCE

ECAMPUS UNIVERSITY Novedrate, Italy
Associate Professor (May 2015 – present)

Applied physics, Industrial Engineering, 2015 - present

Applied physics, IT and Automation Engineering, Engineering, 2015 - present

Applied physics and Air conditioning systems, Civil and Environmental Engineering, Engineering, 2015 - present

Building thermophysics and Air Conditioning, Industrial Engineering, Engineering, 2015 - present

HVAC design, Industrial Engineering, Engineering, 2015 - present

UNIVERSITÀ POLITECNICA DELLE MARCHE Ancona, Italy
Adjunt Professor (October 2014 – December 2016)

Applied physics, Prevention techniques in the workplace environments, 2014 - 2016

TEACHING INTERESTS

List as Thermodynamics, energy conversion, process optimization, Heating, Ventilation and Air Conditioning

LEADERSHIP AND SERVICE

Members of the University's Quality Assurance Committee, from December 2024

Members of the Quality Assurance Groups for Industrial Engineering, Bachelor and Master degree Courses, from 2017 to present

Member of the Academic Teaching Committee of the PhD Science applied to wellness and sustainability, May 2025 - present.

PROFESSIONAL EXPERIENCE

SOGEPU

Città di Castello, Italy

Consultant

August 2020 – December 2021

Research and development activities at the Belladanza plant complex in order to optimize the management of the plant itself, reducing its environmental impact using microalgae and renewable energy generation systems.

ENERECO

Fano, Italy

Consultant

November 2020 – December 2020

Research and development activities to define the requirements for the construction and commissioning of a pilot plant for microalgae production and high value-added compounds, mainly intended for the pharmaceutical and food industries.

TECHNICAL SKILLS

Energy and environmental assessments of complex systems, Optimization analysis of production process to increase energy efficiency and reduce raw materials consumption

PUBLICATIONS

INTERNATIONAL JOURNALS

- Environmental and economic analysis of an olive mill wastewater treatment system integrated with microalgae production. Moglie M., Biancini G., Cioccolanti L. The International Journal of Life Cycle Assessment, 2024. DOI: 10.1007/s11367-024-02296-9
- Valorization of olive mill wastewater for *Arthrospira platensis* production. Moglie M., Biancini G., Norici A., Mugnini A., Cioccolanti L. Cell Reports Sustainability, 2024. DOI: 10.1016/j.crsus.2024-100017
- Comparative study of steam, organic Rankine cycle and supercritical CO₂ power plants integrated with residual municipal solid waste gasification for district heating and cooling. Biancini, G., Cioccolanti, L., Moradi, R., Moglie, M. Applied Thermal Engineering, 2024, 241, 122437
- Screening for tolerance to natural phenols of different algal species: Toward the phycoremediation of olive mill wastewater. Mollo, L., Drigo, F., Moglie, M., Norici, A. Algal Research, 2023, 75, 103256
- A general model for air gasification of heterogenous municipal solid waste. Biancini, G., Moradi, R., Cioccolanti, L., Moglie, M., Del Zotto, L. Energy Conversion and Management, 2023, 278, 116749
- Comprehensive Life Cycle Assessment Analysis of an Italian Composting Facility concerning Environmental Footprint Minimization and Renewable Energy Integration. Biancini, G.; Marchetti, B.; Cioccolanti, L.; and Moglie, M. Sustainability (Switzerland), 14(22). 2022.
- Perspectives and challenges of small scale plant microalgae cultivation. Evidences from Southern Italy. Mennella, L.; Tosco, D.; Alberti, F.; Cembalo, L.; Crescimanno, M.; Del Giudice, T.; Galati, A.; Moglie, M.; Scardera, A.; Schifani, G.; Solfanelli, F.; and Cicia, G. Algal Research, 45: 101693. 1 2020.
- eLearning Course Design in Higher Education to Maximize Students' Performance. Moglie, M.; Simoncini, M.; Mancini, E.; Suraci, V.; and Arnesano, M. Volume 1091 2019.
- A new surface tension equation for refrigerants. Di Nicola, G.; Di Nicola, C.; and Moglie, M. International Journal of Thermophysics, 34(12): 2243-2260. 2013.
- Solid-liquid equilibria for nitrous oxide+ fluoromethane and triple point measurements for refrigerants. Di Nicola, C.; Moglie, M.; Santori, G.; Stryjek, R.; and Di Nicola, G. High Temperatures - High Pressures, 41(2): 145-158. 2012.
- A corresponding states principle-based equation for the surface tension of Alkenes. Di Nicola, G.; Di Nicola, C.; Moglie, M.; and Pacetti, M. Journal of Thermal Analysis and Calorimetry, 108(2): 621-625. 2012.
- A review analyzing the industrial biodiesel production practice starting from vegetable oil refining. Santori, G.; Di Nicola, G.; Moglie, M.; and Polonara, F. Applied Energy, 92: 109-132. 2012.

- Solid-liquid equilibria for the dimethyl ether + carbon dioxide binary system. Di Nicola, G.; Moglie, M.; Stryjek, R.; and Santori, G. *Journal of Thermal Analysis and Calorimetry*, 105(2): 489-493. 2011.
- A techno-economic analysis of biomass gasifiers integrated with high and intermediate temperature solid oxide fuel cells. McIlveen-Wright, D., R.; Moglie, M.; Rezvani, S.; Huang, Y.; Anderson, M.; Redpath, D.; Dave, A.; and Hewitt, N., J. *International Journal of Energy Research*, 35(12): 1037-1047. 2011.
- A generalized equation for the surface tension of refrigerants. Di Nicola, G.; and Moglie, M. *International Journal of Refrigeration*, 34(4): 1098-1108. 2011.
- Carbon dioxide + fluoromethane and nitrous oxide + fluoromethane: Solid-liquid equilibria measurements. Di Nicola, G.; Moglie, M.; Santori, G.; Stryjek, R.; and Polonara, F. *Journal of Chemical and Engineering Data*, 55(11): 5018-5022. 2010.
- Bioenergy II: Modeling and multi-objective optimization of different biodiesel production processes. Di Nicola, G.; Moglie, M.; Pacetti, M.; and Santori, G. *International Journal of Chemical Reactor Engineering*, 8. 2010.
- Alternative biofuels: PVTx measurements for DME + propane. Arteconi, A.; Di Nicola, G.; Moglie, M.; Santori, G.; and Stryjek, R. *Journal of Thermal Analysis and Calorimetry*, 99(3): 899-903. 2010.
- Solid-liquid equilibria for the CO₂ + R143a and N₂O + R143a systems. Di Nicola, G.; Moglie, M.; Santori, G.; and Stryjek, R. *International Journal of Thermophysics*, 30(4): 1155-1164. 2009.
- PVT properties of an alternative biofuel: Dimethyl ether. Arteconi, A.; Di Nicola, G.; Moglie, M.; Santori, G.; and Stryjek, R. *Journal of Thermal Analysis and Calorimetry*, 97(2): 631-636. 2009.
- Quantitation of compounds in biodiesel mixtures with reversed-phase liquid chromatography. Santori, G.; Arteconi, A.; Di Nicola, G.; Moglie, M.; and Stryjek, R. *Energy and Fuels*, 23(7): 3783-3789. 2009.
- eLearning Course Design in Higher Education to Maximize Students' Performance Moglie M., Simoncini M., Mancini E., Suraci V., Arnesano, M. *COMMUNICATIONS IN COMPUTER AND INFORMATION SCIENCE*, vol. 1091, p. 139-148, Springer, Cham, ISBN: 978-3-030-31284-8, ISSN: 1865-0937, doi: 10.1007/978-3-030-31284-8112019

INTERNATIONAL CONFERENCES

- Biancini, G.; Cioccolanti, L.; Marchetti, B.; and Moglie, M. (2022). EVALUATION OF MUNICIPAL LANDFILL LEACHATE TREATMENT BY MICROALGAE. In Chevet P.-F. Scarlat N., G., A., editor(s), *European Biomass Conference and Exhibition Proceedings*, pages 79-85, 2022. ETA-Florence Renewable Energies
- Biancini, G.; Moglie, M.; Marchetti, B.; and Cioccolanti, L. (2022). Life Cycle Impact Assessment of Municipal Solid Waste Management Systems: Improved design for environmental footprint minimization. In: *International Conference on Renewable Energies and Smart Technologies (REST)*, volume I, pages 1-5, 2022.
- Cioccolanti, L.; Moglie, M.; Mahkamov, K.; Paksoy, H.; Chen, C.; Lin, J.; Li, C.; Guan, Y.; Zhou, W.; Abdullah, E.; Mohd Radzi, M.; Shafie, S.; Alimuddin, Z.; Yusof Idroas,

M.; Yew Heng, T.; Azmier Ahmad, M.; Azman Miskam, M.; Kraitong, K.; Wongsapai, W.; Chaichana, C.; and Damronsak, D (2021). Analysis of labour market needs for engineers with enhanced knowledge in sustainable renewable energy solutions in the built environment in some Asian countries. In E3S Web of Conferences, volume 238, 2021.

- Arteconi, C. Di Nicola, M. Moglie, G. Santori, G. Di Nicola. (2011). Experimental investigation of a cascade cycle using R744+R23 as low temperature working fluid. In: Proceedings of 23rd International Congress of Refrigeration, 21-26 August 2011, Prague, Czech Republic. ISBN: 9782913149892
- M. Moglie, F. Polonara, G. Santori (2010). Optimization procedure for a biodiesel production process. In: WREC 2010 - Eleventh Renewable Energy Congress. Abu Dabi, United Arab Emirates, 25-30 September, p. 115-120, Future technology Press, ISBN: 9780956151612
- G. Di Nicola, G. Marinelli, M. Moglie, F. Polonara, G. Santori (2010). Biodiesel process: comparative evaluation of a theoretical model and a real case. In: Thermal and Environmental Issues in Energy Systems. Sorrento, 16-19 May 2010, p. 589-594, Pisa: Edizioni Plus, ISBN: 978- 884672659-9
- G. Di Nicola, G. Marinelli, M. Moglie, F. Polonara, G. Santori (2010). Multi- objective optimization of a biodiesel production process: comparison between algorithms. In: Thermal and Environmental Issues in Energy Systems. Sorrento, Italy, 16-19 May 2010, Pisa: Edizioni Plus, ISBN: 978- 884672659-9
- G. Santori, M. Brasili, M. Moglie, F. Polonara, S. Vasta, A. Freni, G. Restuccia (2010). A mathematical tool for combined simulation of an adsorption chiller operating in a solar air conditioning system. In: Thermal and Environmental Issues in Energy Systems. Sorrento, 16-19 May 2010, Pisa: Edizioni Plus, ISBN: 978-884672659-9
- G. Di Nicola, C. Di Nicola, M. Moglie, G. Santori (2010). Experimental investigation and optimization of a cascade cycle. In: 13th International Refrigeration and Air Conditioning Conference at Purdue. West Lafayette, IN 47907-2032, USA, West Lafayette: Printing Services
- M. Moglie, M. Giordano, A. Norici, F. Polonara, S. Ratti, G. Santori, A. Ciampechini (2010). Fourier Transform Infrared Spectroscopy (FTIR) as a Novel Tool for the Analysis and Monitoring of Biomass Quality in a Photobioreactor for Lipid Production from Microalgae. In: 18th European Biomass Conference and Exhibition, 03 - 07 May 2010, Lyon, France, p. 480-483, ETA-Florence Renewable Energies, doi: 10.5071/18thEUBCE2010- VP1.3.30
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Solid- Liquid Equilibria for the binary systems of natural refrigerants and HFCs. In: Proceedings of the 3rd Conference on Thermophysical Properties and Transfer Processes of Refrigerants. Boulder, USA, 21-26 June 2009
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Solid- Liquid Equilibria for the carbon dioxide + fluoromethane binary system. In: Proceedings of the 24th European Symposium on Applied Thermodynamics. Santiago de Compostela, Spain, 27 June, 01 July 2009, p. 528-529
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Liquid- Liquid Equilibria of the Biodiesel+Glycerol and Biodiesel+Water Systems. In: Proceedings of the 17th Symposium on the Thermophysical Properties. Boulder, USA, 21-26 June 2009

- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Solid- Liquid Equilibria for Binary Systems of Natural Refrigerants and HFC's. In: Refrigerations science and technology proceedings. Boulder, CO, USA, 21-26 June 2009, Paris: International Institute of Refrigeration, ISBN: 978-2- 913149-70-0
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Liquid- Liquid Equilibria of the biodiesel+glycerol and biodiesel+water systems. In: 17th Symposium on thermophysical properties. Boulder, CO, USA, 21-26 June 2009
- G. Di Nicola, M. Moglie, G. Santori, R. Stryjek (2008). Solid-Liquid Equilibria For The $\text{CO}_2 + \text{R143A}$, And $\text{N}_2\text{O} + \text{R143A}$ Systems. In: Book of abstracts - 18th European Conference on Thermophysical Properties. Pau - France, August 31st - September 4th 2008
- G. Di Nicola, G. Giuliani, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Chemical Equilibrium Of Sunower Oil Transestericati. In: ESAT 2008. Proceedings of the 23rd European Symposium on Applied Thermodynamics. Cannes - France, May 29th - June 1st 2008, p. 820-837, Vandouvre Cedex: INPL Atelier De reprographie, ISBN: 2-905267-59-3
- G. Di Nicola, L. Mandozzi, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Solid - Liquid equilibria for the $\text{CO}_2 + \text{R134a}$ binary system. In: ESAT 2008. Proceedings of the 23rd European Symposium on Applied Thermodynamics. Cannes - France, May 29th - June 1st 2008, p. 347-353, Vandouvre Cedex: INPL Atelier De reprographie, ISBN: 2-905267-59-3
- G. Di Nicola, G. Giuliani, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Chemical equilibrium of sunflower oil transesterification. In: Proceedings of the 23rd European Symposium on Applied Thermodynamics. Cannes, France, 29 May - 1 June 2008, p. 820-837

NATIONAL CONFERENCES

- Sapienza, Moglie M, Santamaria S., Costa F., Santori G. (2010).
- Progettazione e realizzazione di una macchina frigorifera ad energia solare per la conservazione dei vaccini o delle derrate alimentari. In: 65° Congresso Nazionale ATI. Chia Laguna Resort, Domus De Maria (CA), 13- 17 September 2010
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Equilibrio liquido-liquido dei sistemi biodiesel-glicerolo e biodiesel-acqua. In: Atti XV convegno AIPT. Pisa, Italia, 25 september 2009, p. 31-37, Pisa: Istituto per i processi Chimico-Fisici, ISBN: 9788865070789
- A. Arteconi, S. Boria, M. L. Corradini, F. Giannoni, M. Moglie, F. Polonara (2009). Sviluppo di un modello matematico per uno scambiatore geotermico a spirale. In: La geotermia per tutti. Ancona, Italia, 06 Novembre 2009
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Equilibrio chimico nella reazione di transesterificazione dell'olio di girasole. In: Atti XI Convegno A.I.P.T., Ancona, Italia, Ottobre 2008, p. 33-56, ISBN: 9788865070048
- G. Di Nicola, M. Moglie, G. Santori (2008). Analisi del processo industriale di produzione del biodiesel. In: 63° Congresso nazionale ATI - Energia per lo sviluppo sostenibile. Palermo - Italy, September 23rd - September 26th 2008, Dario Flaccovio Editore, ISBN: 978-88-7758-839-5

- G. Di Nicola, M. Moglie, G. Santori (2008). Ottimizzazione termodinamica del processo di produzione di biodiesel. In: XIV Convegno A.I.P.T. Ancona, Italia, 03 Ottobre 2008

PATENTS

- Adsorbent photothermal solar panel Bonaccorsi L., Brunetti E., Freni A, Guetti D, Moglie M., Polonara F., Santori G. AN2013A000208, GreenTech S.R.L. 2013.