

Tonia Tommasi



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Personal data: Age 38 **Place and date of birth:** [REDACTED] **24th September 1980**;

Nationality: Italy; **Phone:** [REDACTED]; **Office:** +39 0110904774

MSc in environmental Engineering and PhD in Chemical Engineering both obtained at the Politecnico di Torino (POLITO, Italy). From the PhD degree to present, her research focus on energy and bioproducts from organic waste, i.e. biological hydrogen and biogas production, energy production by bio-electrochemical systems, valorization of organic streams into either fertilizers or other added-value products and sustainability analysis of bioprocesses. Since 2016 she is Assistant Professor of Bioengineering (Polygeneration and Advanced Energy Systems, Re-use and Energy Recovery Processes and Industrial Chemistry). She is coauthor of 26 papers, in peer reviewed journals, 2 book chapters and a book on the Green Energy and Technology Series (Springer). Her h-index is 12. She has many participations in communication activities for the spread of scientific knowledge, in both laboratories and interviews on national mass-media scientific programs.

Education.

B.S./M.Sc. (2006), Environmental Engineering, University “Politecnico di Torino” – Torino, Italy.

Ph.D. (2010) Chemical Engineering, Politecnico di Torino – Torino, Italy.

Professional experiences.

12/2016-current: Assistant Professor at Department of Applied Science and Technology, Politecnico di Torino (POLITO), Italy (Position: Researcher at Time-fixed contract, “Contratto di Ricercatore a Tempo Determinato ai sensi dell'art. 24 comma 3 lettera a) Legge n.240/2010”)

11/2010- 10/2016: Research Scientist at the Italian Institute of Technology (IIT), Torino, Italy.

01/2010- 10/2010: R&D Engineer at Didacta Italia (Torino) company and POLITO.

01/2007-12/2009: PhD program at POLITO

01/2008-07/2008: Visiting researcher, Faculty of Bioscience Engineering, Ghent, Belgium

10/2007-12/2009: Fellowship at POLITO

Research Interests

- Improvement of arid soils by organic wastes
- Microbial Fuel Cells for energy generation
- Anaerobic digestion for H₂ and biogas production
- Energy and environment sustainability analysis of new biotechnologies
- Biotechnologies for bioproducts and bioenergy
- Biological reactor design; scale-up and scale-down optimization

Coordination in research projects (Principal Investigator) and Laboratory activities:

- Currently: Responsible of the collaborative project for the Internationalization of the Research: *Valpo4Circular Economy* (Valparaíso and PoliTO for bioproducts and waste streams reuse in a singular economy approach) with the Pontificia Universidad Católica de Valparaíso (PUCV). Partner responsible: Prof. Carminna Ottone (July 2018-July 2019)
- Currently: Co-responsible of the internal POLITO Research line “*Mitigation and valorization of CO₂ for low-carbon economy*”
- [2016-2019] Co-responsible of the task “*Life-cycle-assessment and REACH studies*” of the project CELBICON (Cost-effective CO₂ conversion into chemicals via combination of Capture, ELeTrochemical and BIOchemical CONVersion technologies) (Head Prof. D. Fino, POLITO, IT), EU H2020 ISIB Project CELBICON
- [2014-2016] Co-responsible of the Project: “*New Catalytic Materials for Innovative Cathodes in Microbial Fuel Cells for Long-Term Energy Production in Marine Systems*” Office of Naval Research (ONR), United Kingdom.
- [2010-2014] Principal Investigator of the IIT-internal project: *Microbial Fuel Cells for energy recovery and wastewater purification*

Performance indicators

Peer-reviewed Papers	26
Book	2
Book chapters	3
Total publications	31
Citations	302
H-Index	12

Publications:

BOOK

1. BioH₂ & BioCH₄ Through Anaerobic Digestion: From Research to Full-scale Applications Series: Green Energy and Technology; Editor: Springer, 2015 Germany; Authors: B.Ruggeri, **T. Tommasi**, S. Sanfilippo
2. Anaerobic Biohydrogen Production: Experimental evaluation of design bioreactor parameters for dark biohydrogen production using organic wastes Editor: *LAP LAMBERT Academic Publishing (May 1, 2011)*, Saarbrücken, Germany ISBN: 978-3-8443-2700-7 Author: **T. Tommasi**

CHAPTER BOOK

1. Sustainability of (H₂+CH₄) by Anaerobic Digestion via EROI approach and LCA evaluations. In the book: Life Cycle Assessment of Renewable Energy Sources. SERIES: Green Energy and Technology 2013, pp 169-194. B.Ruggeri, S.Sanfilippo, **T. Tommasi**. Editor: Springer London
2. Chapter: EAB—Electroactive Biofilm: A Biotechnological Resource; S. Pentassuglia, V Agostino, and **T. Tommasi**. Reference Module in Chemistry, Molecular Sciences and Chemical Engineering, in the Book: Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry; 2018, Pages 110-123, Elsevier

PAPER

1. In situ continuous current production from marine floating microbial fuel cells, Massaglia G., Margaria V., Sacco A., **Tommasi T.**, S. Pentassuglia, D. Ahmed, R. Mo, C.F. Pirri, M. Quaglio *Applied Energy* 230 (2018) 78–85
2. Denitrification of water in a microbial fuel cell (MFC) using seawater bacteria, Naga Samrat MVV, Kesava K. Rao, Bernardo Ruggeri, **Tonia Tommasi**, *Journal of Cleaner Production*, 178, pp. 449-456
3. Sustainability of Microbial Fuel Cell (MFC): a case study, **T. Tommasi** and G. Lombardelli, *Journal of Power Source*, 219, 37-44, 2017
4. Effects of pH variations on anodic marine consortia in a dual chamber microbial fuel cell. Margaria, V, **Tommasi T.**, Pentassuglia, S., Agostino, V, Sacco, A., Armato, C., Chiodoni, A., Schilirò, T., Quaglio, M. *International Journal of Hydrogen Energy*, 2017
5. Long term testing of Microbial Fuel Cells: Comparison of different anode materials. Hidalgo, D., **Tommasi, T.**, Velayutham, K., Ruggeri, B. *Bioresource Technology* Volume 219, Pages 37-44, 2016
6. New insights in Microbial Fuel Cells: Novel solid phase anolyte. **Tommasi, T.**, Salvador, G.P. , Quaglio, M. *Scientific Reports: Volume 6*, 4 July 2016, Article number 29091
7. Ureteral double-J stents performances toward encrustation after long-term indwelling in a dynamic in vitro model. *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, 105(8), pp. 2244-2253 (2017) Cauda, V., Chiodoni, A., Laurenti, M., Canavese, G., **Tommasi, T**
8. Surface modification of commercial carbon felt used as anode for Microbial Fuel Cells (MFCs). Diana Hidalgo, **Tonia Tommasi**, Sergio Bocchini, Alessandro Chiolerio, Angelica Chiodoni, Italo Mazzarino, Bernardo Ruggeri. *Energy* Vol 99, Pages 193–201, 2016.
9. Dynamical analysis of Microbial Fuel Cells based on planar and 3D-packed anodes. **T. Tommasi**, A. Sacco, C. Armato, D. Hidalgo, L. Millone, A. Sanginario, E. Tresso, T. Schilirò, F. C. Pirri. *Chemical Engineering Journal*, 288, pp. 38-49, 2016
10. Pyrolytic carbon-coated stainless steel felt as a high-performance anode for bioelectrochemical systems Kun Guo, Diana Hidalgo, **Tonia Tommasi**, Korneel Rabaey. *Bioresource Technology* 211 (2016) 664–668
11. The study of electrochemically active planktonic microbes in microbial fuel cells in relation to different carbon-based anode materials. Schilirò T, **Tommasi T**, Armato C, Hidalgo D, Traversi D, Bocchini S, Gilli G, Pirri CF. *Journal: Energy* 106 (2016) 277-284
12. Additive Manufacturing of a Microbial Fuel Cell—A detailed study. F. Calignano, **T. Tommasi**, D. Manfredi, A. Chiolerio. *Scientific Reports* 5:17373, 2015
13. Electrochemical and impedance characterization of microbial fuel cells based on 2D and 3D anodic electrodes working with seawater microorganisms under continuous operation. D. Hidalgo, A. Sacco, S. Hernandez, **T. Tommasi**, *Bioresource Technology*, 195 (2015) 139–146.
14. Streamlining of commercial berl saddles: a new material to improve the performance of microbial fuel cell. D. Hidalgo, **T. Tommasi**, V. Cauda, S. Porro, A. Chiodoni, K. Bejtka, B. Ruggeri (2014). In: *ENERGY*, vol. 71, pp. 615-623.
15. A microbial fuel cell powering an all-digital piezoresistive wireless sensor system. **T. Tommasi**, A. Chiolerio, M. Crepaldi, D. Demarchi (2014). In: *Microsystem Technologies*, vol. 20, pp. 1023-1033
16. Efficiency and efficacy of pre-treatment and bioreaction for bio-H₂ energy production from organic waste. B. Ruggeri and **T. Tommasi**. *International Journal of Hydrogen Energy*; Vol. 37, 6491-6502 (2012)
17. On the pre-treatment of municipal organic waste (MOW) towards fuel production: a review. B. Ruggeri, M. Bernardi, **T. Tommasi**. *International Journal of Environment and Pollution*, Vol. 49, No. 3/4, 2012
18. Energy valorisation of residues of dark anaerobic production of Hydrogen. **T. Tommasi**, B. Ruggeri, S. Sanfilippo. *Journal of Cleaner Production*, 34, 91-97 (2012)
19. On energy sustainability of dark anaerobic fermentation of biohydrogen. **T. Tommasi**, B. Ruggeri, S.

- Sanfilippo. Chemical Engineering Transactions ; Vol. 25, 1073-1078 (2011)
20. Process energy sustainability evaluation through a LCA approach, B.Ruggeri, S.Sanfilippo, **T.Tommasi** and D. Fino (2011), Chemical Engineering Transactions, 25, 629-634
 21. Energy balance of dark anaerobic fermentation as a tool for sustainability analysis *B. Ruggeri; T. Tommasi; G. Sassi (2010)*. International Journal of Hydrogen Energy, vol. 35, pp. 10202-10211.
 22. Experimental Kinetics and Dynamics of Hydrogen Production on Glucose by hydrogen forming bacteria (HFB) culture”. B.Ruggeri, **T.Tommasi**, G.Sassi. International Journal of Hydrogen Energy, Vol. 34 (2009) pp.753-763
 23. Acid pre-treatment of sewage anaerobic sludge to increase hydrogen producing bacteria HPB: effectiveness and reproducibility. **T. Tommasi**, G. Sassi and B. Ruggeri. Water Science and Technology, Vol. 58 (8) pp. 1623-1628, 2008

Invited International Talks:

- 18th June, 2009: *Biological production of hydrogen and use of it to enhance axenic production of PHB*, Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium
- 28th November 2013: Towards sustainable wastewater treatment: how might Microbial Fuel Cell contribute in remote terrestrial area. NanotechItaly 2013, Venezia, 27-29 Novembre 2013
- 29th June, 2017: Biotechnological route to add value at organic refuse School of environmental Science and Technology, Hanoi University of Sciences and Technology, Hanoi, Vietnam
- 13th October, 2017 Wastewater treatment and resource recovery: current status and future challenge, In: “Italy-Vietnam Workshop Towards a global approach to water issues: management, monitoring and treatment”, organized by Embassy of Italy and Consulate General of Italy In HCNM, The Reverie Saigon Hotel, Ho chi Min City

Invited talk to National Talks:

- 14th February, 2018: “Green Team- L’esperienza POLITO sul CAMPUS SOSTENIBILE”, WASTE DAD Unige Sostenibile Ri-FIUTO Day, Genova (Italy)
- 26th June, 2014: Dai rifiuti organici ad idrogeno ed elettricità: quali prospettive dalla digestione anaerobica e dalle celle a combustibile microbiche? Conferenza “I nuovi mestieri dell’energia”. organizzata dal comitato interregionale europeo per lo sviluppo di sistemi innovativi energia-ambiente”, San Secondo di Pinerolo (To)

Moreover, she is coauthors of more than 35 scientific works presented to International Conferences.

