

MARICA FALZARANO

Curriculum Vitae

Place Roma (RM)

Date 28/07/2023

Part I – General Information

Full Name	Marica Falzarano
Citizenship	Italian
Spoken Languages	Italian, English, Spanish, German

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
University graduation	2016	Sapienza University of Rome	Bachelor's degree in Environmental Engineering Final grade: 109/110
University graduation	2019	Sapienza University of Rome	Master's degree in Environmental Engineering with Excellence Final grade: 110/110 cum laude
PhD	2023	Sapienza University of Rome	PhD cum laude in Environmental and Hydraulic Engineering (XXXV cycle) with Doctor Europaeus certificate Fields of interest: Sanitary engineering, waste management, biopolymers degradation mechanisms, controlled biological treatment of bioplastics, anaerobic digestion, composting. Research: Monitoring degradation reactions of bioplastics. Mechanisms and environmental implications. Main activities: •Management of laboratory experimental set-up for anaerobic/aerobic degradation processes •Bioplastic matrix physico-chemical characterization •Elaboration and dissemination of experimental results. •Participation to seminars/courses provided by the university; participation to international conferences.
Licensure	2020	Sapienza University of Rome	Qualification to the profession of Civil and Environmental Engineer

Post-graduate studies	04/2022	Sapienza University of Rome	Course “Mutidimensional analysis for social sciences”, prof. Bocci (24 h)
Post-graduate studies	22-23/06/2022	Sapienza University of Rome	Course “Scrittura di documenti scientifici e tecnici con Latex”, prof. Cercato
Post-graduate studies	15/06/2022	Sapienza University of Rome	Seminar “Modellazione degli effetti dei cambiamenti climatici sugli estremi idrologici”, prof. De Luca
Post-graduate studies	8/06/2022	Sapienza University of Rome	Seminar “Siti contaminati e bonifiche ecocompatibili”, dott. Pistilli
Post-graduate studies	26/05/2022	Sapienza University of Rome	Seminar “Integration of two waste streams for CO2 utilization and rare earth elements recovery through mineral carbonation”, prof. Youngjune Park
Post-graduate studies	28/04/2022 & 12/05/2022	Sapienza University of Rome	Seminar “Fundamentals, modelling and novel membrane processes”
Post-graduate studies	12/2020 – 03/2021	Sapienza University of Rome	English Course, prof. Ross Bailes
Post-graduate studies	23, 30/04/2021	Sapienza University of Rome	Seminar “Dispersione di Inquinanti in Atmosfera”, Prof. Paolo Monti
Post-graduate studies	22, 24 and 29/03/2021	Sapienza University of Rome	Seminar “Fondamenti di Trasmissione del Calore”, prof. D’Orazio
Post-graduate studies	15, 19/03/2021	Sapienza University of Rome	Seminar “Comparative analysis of alternative solutions for the new Port of Genoa breakwater”, prof. De Girolamo
Post-graduate studies	15/02/2021	Sapienza University of Rome	Seminar “Carbon footprint assessment in waste management”, prof. Ian Williams (University of Southampton)
Post-graduate studies	9 - 10/02/2021	Sapienza University of Rome	Seminar “Le tecniche di meshing agli elementi finiti: principi teorici e software open-source”, prof. De Donno
Post-graduate studies	28 - 29/01/2021	Sapienza University of Rome	Seminar “Tecniche di analisi isotopica applicate all'ingegneria ambientale”, prof. Sappa
Post-graduate studies	16/12/2020	Sapienza University of Rome	Course “Matlab”. Prof. Moroni
Post-graduate studies	09/2020	Sapienza University of Rome	Seminar “La mitigazione del rischio idraulico nel contesto della sostenibilità e dei cambiamenti climatici”, Prof. Cioffi
Post-graduate studies	07/2020	Sapienza University of Rome	Seminar “Life cycle assessment: state of the art and research perspectives”, Prof. Lucia

Post-graduate studies	13– 16/07/2020	Acea ElaboRI	Rigamonti (Politecnico di Milano) Corso di formazione specifica sulla sicurezza per personale tecnico (ai sensi dell'art.37 del D.Lgs.81/08 e s.m.i.)
Post-graduate studies	8/05/2020	Sapienza University of Rome	Seminar "Monitoring chemical water quality through mass spectrometry based non-target screening", Prof. Andrea Mizzi Brunner (KWR Water Research Institute)
Post-graduate studies	4/05/2020	Sapienza University of Rome	Seminar "Selected bioprocesses for the production of biofuels and energy from biomass and waste", tenuto dal Prof. Lyberatos (Technical University Athens)
Post-graduate studies	27/04/2020	Sapienza University of Rome	Seminar "Analisi dimensionale, criteri di similitudine e modellistica", Prof. De Girolamo
Post-graduate studies	Feb-Jun 2020	Sapienza University of Rome	Course "Scienze della sostenibilità"
Post-graduate studies	17, 21- 24/01/2020	Politecnico di Milano	"Statistics applied to environmental engineering" prof. Arianna Azzellino
Post-graduate studies	01/2020	Sapienza University of Rome	"Corso di scrittura tecnico-scientifica", Prof. Emilio Matricciani
Post-graduate studies	11/12/2019	Sapienza University of Rome	Seminar "CO2 capture and utilisation via aqueous mineral carbonation", Prof. E. Kennedy (University of Newcastle)

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
01/04/23	present	Sapienza University of Rome	Research fellow at DICEA department with the research project "Biodegradabilità di bioplastiche monouso ed effetti ambientali associate" (Disposable bioplastics biodegradability and associated environmental effects) (research grant)
05/09/2022	31/12/2022	Universitat Jaume I – Castellon de la Plana (Spain)	Research activity in the PIMA group as visiting PhD student (funded by Sapienza University with a mobility grant for PhD students – see Part V)

IIIB – Other Appointments

Start	End	Institution	Position
2019	2020	Lo Spiegone – In trouble be clear (online newspaper)	Author – Environmental section
12/02/2020	14/02/2020	Workshop “SiCon2020” (Sapienza University of Rome)	Organizing staff
18/11/2020	20/11/2020	Venice 2020 - 8th international symposium on energy from biomass and waste	Speaker
17/05/2021	19/05/2021	BIORESTEC 2021 - 3rd International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability	Speaker
06/2021	11/2021	Sapienza University of Rome	Tutor for high school students (tutoring grant “Attività applicative e sperimentali su valorizzazione e recupero di residui organici biodegradabili - brevi esperienze dimostrative, presentazioni con video e connessioni da remoto ad apparati sperimentali” – see part V)
29/06/2021	02/07/2021	SIDISA2021 – XI international symposium on environmental engineering	Speaker
11/10/2021	15/10/2021	Sardinia 2021 - 18th international symposium on waste management and sustainable landfilling	Speaker
2021	2022	Sapienza University of Rome	Project component (experimental campaign manager) – <i>Progetto di ateneo piccolo (bandi ateneo 2020) “Studio del comportamento ambientale di bioplastiche monouso nei processi di digestione anaerobica”</i> (Evaluation of the environmental behaviour of disposable bioplastics during anaerobic degradation) (12 months)
2021	2023	Sapienza University of Rome	Speaker for “Class Training” project (10 h)
18/05/2022	20/05/2022	SUM 2022 - 6th Symposium on Circular Economy and Urban Mining	Speaker
24/10/2022	26/10/2022	EURASIA 2022 - 6th EurAsia waste management symposium	Speaker
2022	2022	Sapienza University of Rome	Speaker for “SMART MeetING”

2022	2023	Sapienza University of Rome	project (4 h)
			Project component (experimental campaign manager) – <i>Progetto di ateneo medio (bandi ateneo 2021)</i> “Studio del destino delle bioplastiche monouso nei processi di digestione anaerobica: degradazione biochimica e comportamento ambientale” (Evaluation of disposable bioplastics fate during anaerobic digestion process: biochemical degradation and environmental behaviour) (24 months)

Part IV – Teaching experience

Year	Institution	Lecture/Course
2021	Sapienza University of Rome	Application and experimental activities on valorization and recovery of organic residues through biological treatment. (Tutoring grant – see Part V) (20 h)
2022	Sapienza University of Rome	Seminar: “ <i>Bioraffinerie e bioplastiche</i> ” (Biorefinery and bioplastics) - <i>Master Universitario di II livello in Ingegneria dell’innovazione – Modulo 12, Biotecnologie, Sostenibilità e impatto ambientale</i> (2h)
2022	Sapienza University of Rome	Seminar: “Bioplastics. Production, composition, treatment and disposal” – BEST events “Another One Bites the Microplastics” (2h)
2020-2023	Sapienza University of Rome	Assistance to teaching, classroom exercises and laboratory activities for the courses of Sanitary Engineering (bachelor’s degree in Environmental Engineering) and Solid Waste Treatment Plants (master’s degree in Environmental Engineering)
2020-2023	Sapienza University of Rome	Co-supervisor for Bachelor’s (n. 4) and Master’s (n. 2) thesis (Bachelor’s and Master’s degree in Environmental Engineering)

Part V - Society memberships, Awards and Honors

Year	Title
2021	Winner of “Giuseppe Genon award for young researchers” (SIDISA2021 – XI international symposium on environmental engineering)
2021	Winner of a mobility grant for PhD students with the research project “Assessment of bioplastic degradation mechanisms and environmental implications evaluation” (Sapienza University of Rome)

2021	Winner of a tutoring grant (Sapienza University of Rome - <i>Bando di concorso mediante valutazione comparativa per il conferimento di n. 12 borse di tutorato per l' a.a. 2020/2021 - dottorandi- i^a tranche (denominati B2) – Tutorati in ingresso e in itinere</i> ; Title: <i>Attività applicative e sperimentali su valorizzazione e recupero di residui organici biodegradabili - brevi esperienze dimostrative, presentazioni con video e connessioni da remoto ad apparati sperimentali</i>)
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Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2020	<i>Studio del comportamento ambientale di bioplastiche monouso nei processi di digestione anaerobica</i> (Evaluation of the environmental behaviour of disposable bioplastics during anaerobic degradation)	Assessment of the degradation of commercial disposable products in rigid bioplastics, with the aim of: i) understanding the role of chemical and physical characteristics on biodegradation and chemical-physical alteration of bioplastics; ii) estimating the individual and synergistic effects of anaerobic digestion processes on the evolution and conversion yields of bioplastics into biogas and digestate; iii) understanding the possible presence of microplastics downstream of the anaerobic digestion process.	4.000
2021	<i>Studio del destino delle bioplastiche monouso nei processi di digestione anaerobica: degradazione biochimica e comportamento ambientale</i> (Evaluation of disposable bioplastics fate during anaerobic digestion process: biochemical degradation and environmental behaviour)	Study of the degradation of commercial disposable products in rigid bioplastics through the: 1) Identification of the role that the chemical and physical characteristics exert on the biodegradation and the chemical-physical alteration of bioplastics; 2) Estimation of the individual and synergistic effects of the operating conditions of the anaerobic digestion processes on the evolution and conversion yields of bioplastics into biogas and digestate, with particular reference to the comparison between mesophilic and thermophilic conditions; 3) Estimation of the presence of microplastics and inorganic contaminants (e.g. Ti) downstream of the anaerobic digestion process; 4) Estimation of the expected quantities of bioplastics in anaerobic digestion plants at the service of urban centers characterized by particular problems (eg, centers with a marked tourist vocation).	13.000

Part VII – Research Activities

Keywords	Brief Description
Bioplastics	Understanding the role of chemical and physical characteristics of a polymeric matrix in biodegradation and chemo-physical alteration of
Biodegradability	

Anaerobic degradation	bioplastics; evaluating the effects of operating conditions on the anaerobic/aerobic degradation process, on biogas/CO ₂ evolution and yield and on the final digestate/compost; preliminary assessment of micro-bioplastics in the final digestate; simulation of bioplastics bio- and photodegradation in natural environments (soil, water)
Composting	
Waste management	

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	3	SCOPUS	2023	-
Papers [international]	6	(none; conference proceedings)	2020	2022
Papers [international]	2	(none; under review)	2023	-

Total Impact factor	20.7
Total Citations	4
Average Citations per Product	1.3
Hirsch (H) index	1
Normalized H index*	1

*H index divided by the academic seniority (calculated assuming as starting date the year of the first paper published in bibliometric database)

Part IX– Selected Publications

List of the publications selected for the evaluation. For each publication report title, authors, reference data, journal IF (if applicable), citations, press/media release (if any).

- 1) Falzarano, M., Poletini, A., Pomi, R., Rossi, A., Zonfa, T., 2023. *Anaerobic Biodegradability of Commercial Bioplastic Products: Systematic Bibliographic Analysis and Critical Assessment of the Latest Advances*. Mater. 2023, Vol. 16, Page 2216 16, 2216. <https://doi.org/10.3390/MA16062216>
IF: 3.4
Citations: 1
- 2) Bracciale, M.P., De Gioannis, G., Falzarano, M., Muntoni, A., Poletini, A., Pomi, R., Rossi, A., Sarasini, F., Tirillò, J., Zonfa, T., 2023. *Anaerobic biodegradation of disposable PLA-based products : Assessing the correlation with physical, chemical and microstructural properties*. J. Hazard. Mater. 452. <https://doi.org/10.1016/j.jhazmat.2023.131244>
IF: 13.6
Citations: 1
- 3) Zonfa, T., Kamperidis, T., Falzarano, M., Lyberatos, G., Poletini, A., Pomi, R., Rossi, A., Tremouli, A., 2023. *Two-Stage Process for Energy Valorization of Cheese Whey through Bio-Electrochemical Hydrogen Production Coupled with Microbial Fuel Cell*. Fermentation 9. <https://doi.org/10.3390/fermentation9030306>
IF: 3.7
Citations: 2
- 4) Bracciale, M.P., De Gioannis, G., Falzarano, M., Muntoni, M., Poletini, A., Pomi, R., Rossi, A., Sarasini, F., Spiga, D., Tirillò, J., *Anaerobic Degradation of Disposable Bioplastics*, EURASIA2022 – 6th EURASIA Waste Management Symposium (24 – 26/10/2022, Istanbul - Conference proceedings)

- 5) Bracciale, M.P., De Gioannis, G., Falzarano, M., Muntoni, M., Poletini, A., Pomi, R., Rossi, A., Sarasini, F., Spiga, D., Tirillò, J., *Anaerobic co-digestion of single-use bioplastics and food waste*, SUM2022 – 6th Symposium on Circular Economy and Urban Mining (18 – 20/05/2022, Capri - Conference proceedings)
- 6) De Gioannis, G., Falzarano, M., Muntoni, M., Poletini, A., Pomi, R., Rossi, A., Spiga, D., *Anaerobic digestion of biodegradable plastics: analysis in terms of process conditions and overall performance*, Sardinia2021 – 18th International Symposium on Waste Management and Sustainable Landfilling (11 – 15/10/2021, Cagliari - Conference proceedings)
- 7) Falzarano, M., Poletini, A., Pomi, R., Rossi, A., *Biodegradation of polylactic acid-based disposable items under anaerobic conditions*, SIDISA2021 – XI International Symposium on Environmental Engineering (29/06 – 02/07/2021, Torino - Conference proceedings)
- 8) Falzarano, M., Poletini, A., Pomi, R., Rossi, A., *Assessment of anaerobic degradation of polylactic acid-based disposable items*, Bioretec 2021 – 3rd International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability (17 – 19/05/2021, online conference - Conference proceedings)
- 9) Falzarano, M., Poletini, A., Pomi, R., Rossi, A., *Assessment of the characteristics of bio-based plastics in terms of composition and biodegradability*, Venice 2020 – 8th International Symposium on Energy from Biomass and Waste (18 – 20/11/2020, online conference - Conference proceedings)
- 10) Bracciale, M.P., De Gioannis, G., Falzarano, M., Muntoni, A., Poletini, A., Pomi, R., Rossi, A., Sarasini, F., Tirillò, J., Zonfa, T., *Disposable Mater-Bi® bioplastic tableware: characterization and assessment of anaerobic biodegradability* (under review with minor revisions – Fuel)
IF: 7.4
- 11) Falzarano, M., Poletini, A., Pomi, R., Rossi, A., Bracciale, M.P., Sarasini, F., Tirillò, J., Zonfa, T., *Biodegradation of PLA-based disposable items under mesophilic anaerobic conditions* (under review - Waste Management)
IF: 8.1