

MARTINA LENZUNI

martina.lenzuni@cnr.it | National Research Council of Italy (CNR) |

Fixed-term researcher | Biomedical Engineering



SUMMARY

A passionate and dynamic scientist with a multidisciplinary background in biomedical engineering, material science, and molecular biotechnology. My main interest is studying how materials can influence cell behavior and vice versa. In particular, I'm focused on the development and analysis of advanced nanomaterials for biomedical devices and tissue regeneration. Since 2024, I have also developed computational models to study the behavior of nanostructured materials under the influence of electromagnetic fields and their interactions with human tissues.

WORK EXPERIENCE

2024 – ongoing

Fixed-term researcher | Institute of Electronics, Computer and Telecommunication Engineering (IEIT), National Research Council of Italy (CNR) | Genoa, Italy

- Development of biohybrid interfaces and biomaterials for the next generation of biomedical robotic systems.

2023 – 2024

Postdoctoral researcher | Department of Civil, Chemical, and Environmental Engineering, University of Genoa | Genoa, Italy

- Analysis of biotechnological processes for the valorization of biowaste and biomaterials and exploitation of microalgae in circular bioeconomy.

2022 – 2023

Research fellow | Italian Institute of Technology (IIT) Foundation - IUV s.r.l. | Genoa, Italy

- Design and production of naturally derived compostable biomaterials for food packaging applications.

2022

Visiting PhD student | Department of Electrical and Information Engineering, Polytechnic University of Bari | Bari, Italy

- Computational fluid dynamics simulations for the assessment of drug-eluting stent coatings.

2019

Erasmus Trainee | School of Pharmacy, University of East Anglia (UEA) | Norwich (UK)

- Synthesis of triggered antibiotic delivery systems for the treatment of *Pseudomonas aeruginosa* lung infections.

EDUCATION

2019 – 2022 | Italian Institute of Technology (IIT) Foundation – University of Genoa | Genoa, Italy
International Ph.D. in Bioengineering and Robotics - Curriculum Bionanotechnology (cum laude)

2017 – 2019 | University of Florence | Florence, Italy

Master's degree in molecular biotechnology (110/110 cum laude with special mention from the commission)

2014 – 2017 | University of Florence | Florence, Italy

Bachelor's degree in biotechnology (110/110 cum laude with special mention from the commission)

TEACHING ACTIVITIES

2023/2024. Processes for liquid and gaseous biofuels production (PhD program Chemical, Material and Process Engineering, University of Genoa, Italy).

2023/2024. Industrial Biotechnology (Master's Degree in Chemical and Process Engineering, University of Genoa, Italy).

2023/2024. Industrial Microbiology and Biotechnology of Fermentations with Laboratory (Bachelor's Degree in Biotechnology, University of Genoa, Italy).

2022/2023. Biochemistry and Environmental Biotechnology (Master's Degree in Environmental Engineering, University of Genoa, Italy).

Moreover, I've co-supervised Master's theses in Medical Biotechnology, Chemical Engineering, and Environmental Engineering.

SCIENTIFIC PUBLICATIONS

2025 – Lenzuni, M., Marrella, A., Chiaramello, E., Suarato, G., & Ravazzani, P. Exploring the Bioengineering Potential of CoFe₂O₄-BaTiO₃ Nanoparticles: A Dive into the Magnetoelectric Coefficient. *Advanced Electronic Materials*, 2500014.

2025 – Lenzuni, M., Giannoni, P., Chiaramello, E., Fiocchi, S., Suarato, G., Ravazzani, P., & Marrella, A. Multiphysics analysis of the dual role of magnetoelectric nanoparticles in a microvascular environment: from magnetic targeting to electrical activation. *Frontiers in Bioengineering and Biotechnology*, 12, 1467328.

2025 – Lenzuni, M., Demichelis, F., Basbus, J. F., ...& Casazza, A. A. Microalgae-based bioremediation of olive mill wastewater: Technical and environmental evaluations using orange peel and orange peel-derived biochar. *Sustainable Materials and Technologies*, 43, e01338.

2025 – Lenzuni, M., D'Agostino, G., Perego, P., Converti, A., & Casazza, A. A. Insights into the effects of phenolic compounds on the growth of *Chlorella vulgaris*: The case of olive mill wastewater. *Science of The Total Environment*, 958, 177944.

2025 - Demichelis, F., Lenzuni, M., ... & Tommasi, T. Agro-food waste conversion into valuable products in the Italian scenario: current practices and innovative approaches. *Journal of Environmental Chemical Engineering*, 115458.

2024 - Marrella, A., Giannoni, P., Lenzuni, M., Suarato, G., Fiocchi, S., Chiaramello, E., & Ravazzani, P. Temperature-dependent cytokine neutralization induced by magnetoelectric nanoparticles: an in silico study. *International Journal of Molecular Sciences*, 25(24), 13591.

2024 - Lenzuni, M., Casazza, A. A., & Converti, A. From laboratory- to industrial-scale plants: the future of anaerobic digestion of olive mill solid wastes. *Bioresource Technology*, 130317.



2024 - Gnocchi, C., Lenzuni, M., ... & Athanassiou, A. Zein spray-dried microparticles loaded with chemically modified curcumin for active wound healing. *Journal of Drug Delivery Science and Technology*, 101, 106155.

2024 - Martorana, A., Lenzuni, M., ... & Pitarresi, G. Schiff Base-Based Hydrogel Embedded with In Situ Generated Silver Nanoparticles Capped by a Hyaluronic Acid–Diethylenetriamine Derivative for Wound Healing Application. *ACS Applied Materials & Interfaces*, 16(16), 20186-20201.

2024 - Papadopoulou, E. L., Barbetta, A., Fiorentini, F., Lenzuni, M., ...& Athanassiou, A. Upcycling of Cotton Waste to Functional CarbonDots: Photocatalysis and Antibacterial Action under Vis-NIR Light. *Surfaces and Interfaces*, 104241.

2024 - Contardi, M., Summa, M., Lenzuni, M., ...& Athanassiou, A., & Bertorelli, R. Combining Alginate/PVPI-Based Film with Frequency Rhythmic Electrical Modulation System (FREMS™) Technology as An Advanced Strategy for Diabetic Wounds. *Macromolecular Bioscience*, 2300349.

2024 - Lenzuni, M., Fiorentini, F., Summa, M., Bertorelli R., Suarato, G., Perotto, G., & Athanassiou, A. Electrospayed zein nanoparticles as antibacterial and anti-thrombotic coatings for ureteral stents. *International Journal of Biological Macromolecules*, 257, 128560.

2023 - Ruggeri, M., Lenzuni, M., Suarato, G., .., Athanassiou, A., & Sandri. Polysaccharide-protein microparticles based-scaffolds to recover soft tissue loss in mild periodontitis. *International Journal of Pharmaceutics*, 640, 123015.

2023 - Lenzuni, M., Bonfadini, S., Criante, L., Zorzi, F., Summa, M., Bertorelli, R., Suarato, G., & Athanassiou, A. Dynamic investigation of zein-based degradable and hemocompatible coatings for drug-eluting stents: a microfluidic approach. *Lab on a Chip*, 23(6), 1576-1592.

2021 - Contardi, M., Lenzuni, M., ... & Athanassiou, A. Hydroxycinnamic acids and derivatives formulations for skin damages and disorders: A review. *Pharmaceutics*, 13(7), 999.

2021 - Lenzuni, M., Suarato, G., ... Sandri, G., & Athanassiou, A. Development of biodegradable zein-based bilayer coatings for drug-eluting stents. *RSC advances*, 11(39), 24345-24358.

Moreover, I am a peer-reviewer for scientific journals, such as Chemical Engineering Journal, Frontiers in Bioengineering and Biotechnology, ACS Applied Materials & Interfaces, ACS Omega, ... Additionally, I am a guest editor for Gels and Journal of Functional Biomaterials (MDPI) and member of the Early Career Editorial Board of Materials (MDPI).

DISSEMINATION ACTIVITIES AND AWARDS

2024 – PhD Thesis Award from the City of Florence, with a mention for the exceptional scientific value of the thesis.

2021-2023 - Speaker at the European Researchers' Night, Genoa (Italy).

2020 - Alberto Bardazzi Award, Top Master's graduate of the University of Florence (Italy).

2020 - Speaker at the Bioethics Festival, Santa Margherita Ligure (Italy).

2017 – Silver medal as a member of the Italian team in the international bioengineering competition iGEM (International Genetically Engineered Machine competition), Giant Jamboree. TU Delft (Netherlands).