CV Maria Eleni Rizou

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Profile

I am a doctoral scientist in electronics and electrical engineering with a primary degree in Physics and an MSc in electronics and telecommunications from University of Athens. During the time of my PhD I had the opportunity to work in the Southampton Nanofabrication Centre and the Centre of Hybrid Biodevices for the design and development of a novel biomedical device prototype. I further worked as a post-doctoral researcher at the Institute of Microelectronics and Microsystems at the National Research Council in Rome in a project related to the use of microwave techniques for the assessment and elimination of humidity levels and the development of an electronic nose sensor for the characterization of biological materials, with an application to cultural heritage restoration of historical buildings. Currently, I work as a post-doctoral researcher at Institute of Nanoscience and Nanotechnology of NCSR Demokritos in Athens, in a project related to monitoring of food quality in collaboration with the Agricultural University of Athens. Regarding non academic experience, in 2020-2021 I had the opportunity to work as a co-creator and coordinator of PREVAILS project and gain very useful insights in the field of entrepreneurship (design thinking, business modeling, survey-driven market testing etc.) as well as new tools and techniques on how to manage projects and present ideas clearly. The broad range of applications and the participation in multidisciplinary projects, gave me the opportunity to interact and learn how to efficiently communicate with experts of different expertise, such as biologists (University of Padova, Imperial College London), archaeologists (University of Rome), food scientists (Agricultural University of Athens), stakeholders of a business idea, students etc. I consider myself a communicative, encouraging team player who adapts quickly and is also able to bring projects into completion independently. Overall, skilled in critical thinking and the ability to effectively transfer my ideas to fulfill the objectives of diverse projects.

Interests: Nanotechnology, micro and nanofabrication, electronics, sensors, biomedical devices; sustainable innovation and ethical data mining; prototype development for real-world applications, outreach activities and science communication.

Work and Research Experience

2024-now	Postdoctoral researcher at Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens. **Project: i)** Development of optical response sensors for the sensing of volatile organic compounds in food spoilage (Collaboration with Agricultural University of Athens), **ii)** Development of high performance OLEDs.
2022-2023	Post-doctoral researcher at Institute of Microelectronics and Microsystems, National Research Council (CNR) Rome & University of Rome Tor Vergata. **Project: i)** Development of microwave techniques for the assessment and elimination of humidity levels in historical monuments. **ii)** Development of an electronic nose sensor for the characterization of

	biological materials.
2020-2021	Co-creator and coordinator of PREVAILS idea. Accepted and financially supported as one of the eight projects in Versus Virus and UNIL UCreate3 acceleration program.

Education

2014-2019	PhD student in the Electronics and Computer Science department of the University of Southampton. **Project:** The design and development of a 2D micro-magnetic neuro-stimulating platform.
2014	Visitor student in the department of Mathematics, University of Southampton (3 month period).
2011-2013	2-year M.Sc in Electronics, Telecommunications & Applied Electromagnetism (P/H, Ραδιοηλεκτρολογία και Ηλεκτρονική), National and Kapodistrian University of Athens, Greece. (Grade 8.53/10).
2006-2011	Physics degree with direction to electronics, telecommunications and automatic control systems. National and Kapodistrian University of Athens, Greece. (Grade 7.8/10).

Funding-Awards

2021-2020	i) Versus Virus Hachaton/ Incubator on Initiatives against COVID-19. ii) University of Lausanne UCreate3 acceleration program. Team PREVAILS. Awarded as a top idea and winning monetary funding to further expand the idea into a business plan (11.000 €).
2017	Best poster contribution in Nanoevent 2017 University of Southampton (external panel review).
2014-2017	"The A.G. Leventis Foundation" Scholarship for funding of PhD degree in the University of Southampton.
2011-2012	"Zoi Soutsou" Scholarship for MSc degree in the National and Kapodistrian University of Athens.
2006	State Award for high rank entering in the Physics Department of the National and Kapodistrian University of Athens.

Skills and Qualifications

Simulation software	FEM simulation (COMSOL Multiphysics), Spice, NEURON software
Data processing	Origin, Mathematica, Matlab, C, Python
Design software packages	L-EDIT Tanner Tools, Adobe Illustrator, Cinema 4D
Data Presentation	Microsoft Office Suites (Power Point, Word, Excel)
Design Thinking	IBM Certification on Enterprise Design Thinking, Mural

(certification, software, tools etc.)	
Micro-fabrication processes	▪ Optical lithography ▪ Deposition processes: electron beam deposition, reactive sputtering, electrochemical deposition ▪ Dry etching processes with reactive gases: RIE, ICP ▪ From chip to device: scriber/dicer, wirebonding, encapsulation to a biocompatible packaging ▪ Chemical Vapour Deposition (Parylene-C) ▪ Soft lithography/moulding (PDMS) ▪ Nanoscribe (little experience)
Imaging and Optical Characterisation	▪ Optical & Fluorescent microscopy ▪ Scanning Electron Microscopy ▪ Contact angle measurements ▪ UV-visible spectroscopy ▪ Fourier Transform Infrared spectroscopy ▪ Photoluminescence spectroscopy
Electrical and Magnetic Characterisation	▪ Semiconductor parameter analyser (2, 4 probe measurements) for I-V, C-V and C(f) electrical measurements. ▪ VNA high frequency measurements using antennas (antenna characterisation, free space measurements, TRL calibration). ▪ Experience with methodologies of measuring electrical permittivity at low or high frequencies. ▪ Fabrication of phantom gel (to mimic permittivity and conductivity oneural tissue) and custom made characterization setup. ▪ Experience with magnetic and magnetofluorescent beads. ▪ Experience with typical electronic biasing/reading equipment, real time measurements etc.
Supervising / Teaching university students	▪ Demonstrator in undergraduate student labs in University of Southampton. Department of Physics and Department of Electronics & Computer Science: Electronic Circuits, Communications and Signal Processing, Automatic Control Systems, Optics, Mechanics, Uncertainty analysis. ▪ Teaching assistant in undergraduate student labs in National and Kapodistrian University of Athens: Electronics, Telecommunication Systems, Programming. ▪ Courses delivery to University students: Physics, Mathematics, Electromagnetism, Quantum Mechanics, Semiconductor Physics.
Languages	▪ English: excellent level - C2 ▪ French: intermediate level - B1 (DELF A1-A4) ▪ German: upper level - (lessons up to C1) ▪ Italian: introductory level - (by experience living in Italy) ▪ Greek: native speaker

Conferences, Workshops, Seminars, Outreach Activities

- The 8th International Conference in Conservation of Architectural Heritage (CAH), Sardinia, Italy, 2024
- BROWN - EPFL - ETHZ joint Summer School on Neurophysiology for Neural and Biomedical Engineering, Zermatt, Switzerland, 2018
- International Women's Day 2017
- Science and Engineering day at University of Southampton 2017
- Outreach activities for High Schools 2017
- Biofabrication Conference, Winston-Salem, NC, USA, 2016
- Organising: "Tech me Out" nights for Pint of Science 2016 Southampton
- BioCas Conference, Shanghai, China, 2016
- School on Neurotechniques, University of Padua, 2015
- Electrochemical Deposition for Electronics Workshop, University of Edinburgh, 2014
- COMSOL Multiphysics Workshop, Southampton, 2014
- Summer School on Innovative materials, Nanotechnology & Microsystems, N.C.S.R. Demokritos, Athens, 2012
- International Particle Physics Masterclasses, NTUA, Athens, 2005

Representative Research Publications

[1] "Magnetic stimulation in the microscale: the development of a 6x6 array of micro-coils for stimulation of excitable cells in vitro", M. E. Rizou and T. Prodromakis, Biomed. Phys. Eng. Express, Dec. 2017.
[2] "Electrothermal deterioration factors in gold planar inductors designed for microscale bio-applications", M.E. Rizou and T.Prodromakis, Microelectron. Eng., Oct. 2018.
[3] "A planar micro-magnetic platform for stimulation of neural cells in vitro", M. E. Rizou and T. Prodromakis, Proc. - 2016 IEEE Biomed. Circuits Syst. Conf. BioCAS 2016, pp. 34–37, 2016.
[4] "Non-destructive microwave treatment and free-space measurements for the quantification and elimination of moisture levels in cultural heritage monuments", M.E. Rizou, R. Marcelli, G. Capoccia, E. Proietti, Journal of Cultural Heritage 67, 270-276, 2024.
[5] "Sulfur-Doped ZnO as Cathode Interlayer for Efficient Inverted Organic Solar Cells", E. Polydorou, G. Manginas, G. Chatzigiannakis, Z. Georgiopoulou, A. Verykios, E. Sakellis, M.E. Rizou, V. Psycharis, L. Palilis, D. Davazoglou, A. Soultati, M. Vasilopoulou, Materials 18 (8), 1767, 2025.