MARIE SKŁODOWSKA-CURIE POSTDOCTORAL FELLOWSHIPS 2022

EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS

HOST INSTITUTION

NOVA SCHOOL OF SCIENCE AND TECHNOLOGY

RESEARCH GROUP AND URL

BIOMOLECULAR ENGINEERING LAB - https://sites.fct.unl.pt/biomolecular_eng/

SUPERVISOR (NAME AND E-MAIL)

CECÍLIA ROQUE – cecilia.roque@fct.unl.pt

SHORT CV OF THE SUPERVISOR

Cecilia Roque is an Associate Professor in Bioengineering at the Chemistry Department, School of Science & Technology at NOVA University (Lisbon, Portugal). Cecilia is a principal researcher at UCIBIO-NOVA and leads the Biomolecular Engineering Lab. She holds a degree in Chemical Engineering (Major in Biotechnology) & a PhD in Biotechnology from Instituto Superior Técnico, and has an Habilitation in Bioengineering from NOVA University of Lisbon. Cecilia has been a Visiting Scholar at the University of Cambridge and at the Catholic University of America, a Post-doctoral researcher at the Institute of Biotechnology (University of Cambridge) and at INESC-MN (Lisbon, Portugal), and a visiting Professor at the University of Cambridge (2006, 2011), University of São Paulo (2015-2018), University of Nantes (2011) and City University of New York (2018).

Her research focus on bioengineering, namely on the development of advanced functional materials that combine affinity receptors with bio-based and sustainable materials for bioseparation, sensing and biomedical applications.

Cecilia has been the recipient of several national and international awards, namely a Starting Grant from the European Research Council (2014). She has training from biotech entrepreneurial programs (Cambridge Entrepreneurship Center, University of Cambridge and COTEC, PT).

Cecilia has published 91 papers in top journals in bioengineering, multidisciplinary and materials sciences (e.g. Adv. Funct. Materials, Scientific Reports, TIBTECH) with over 2400 citations. She edited 2 books and contributed with 9 book chapters. Her research work has also resulted in 3 international patents. Cecilia has wide experience in supervision with completed 9 postdoctoral fellows, 11 PhD students and 36 Master students. Roque´s lab is currently composed by 3 junior researchers, 2 postdoctoral fellows, 9 PhD students, and a variable number of master, undergraduate and visiting scientists. She is an Editorial Board member of Biotechnology Journal, MaterialsToday BIO, Frontiers in Biotechnology and Bioengineering, Sensors, Biosensors. She is a member of several international societies and currently serves as a Board member (2014-2019) and Co-Chair (2019-) to the Bioengineering and Bioprocessing Division of the European Federation of Biotechnology and vice-president (2019-) of the International Society for Molecular Recognition. Since the start of her independent research career in 2007, Cecilia has attracted competitive funding from national and international funding bodies (total raised 5M€), coordinated 9 research projects and acted as team member in 4, dealing with a total of 12 academic and 3 industrial partners.

https://orcid.org/0000-0002-4586-3024
https://www.scopus.com/authid/detail.uri?authorId=7006347256

5 SELECTED PUBLICATIONS

- Esteves, C, Ramou E, Porteira ARP, Barbosa AJM, Roque ACA. 2020. Seeing the Unseen: The Role of Liquid Crystals in Gas-Sensing Technologies. Advanced Optical Materials. 1902117:1-29
- Frazão, J, Palma SICJ, Costa HMA, Alves C, Roque ACA, Silveira M. 2021. Optical Gas Sensing with Liquid Crystal Droplets and Convolutional Neural Networks. Sensors. 21(8):2854

- Esteves C, Santos GMC, Alves C, Palma S, Porteira AR, Filho J, HA C, Alves VD, Faustino BMM, Ferreira I, Gamboa H, Roque ACA. 2019. [Effect of film thickness in gelatin hybrid gels for artificial olfaction](). Materials Today Bio. 1, 100002
- Hussain, A, Semeano ATS, Palma SICJ, Pina AS, Almeida J, Medrado BF, Pádua ACCS, Carvalho AL, Dionísio M, Li RWC, Gamboa H, Ulijn RV, Gruber J, Roque ACA. 2017. [Tunable Gas Sensing Gels by Cooperative Assembly](). Advanced Functional Materials. 1700803:1–9
- Palma, S, Traguedo AP, Porteira AR, Frias MJ, Gamboa H, Roque ACA. 2018. [Machine learning for the meta-analyses of microbial pathogens' volatile signatures](). Scientific Reports. 8:3360.
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PROJECT TITLE AND SHORT DESCRIPTION

PROJECT 1 - Optical electronic nose for medical diagnostics – Within the scope of an ERC-funded project, our team is developing unique opto-electronic materials for gas sensing, used as sensing materials in a dedicated electronic nose device. We have recently shown the power of image analysis using convolutional neural networks to provide extremely fast and sensitive identification and quantification of specific volatile organic compounds. This MSCA project intends to leverage this preliminary data to build an optical e-nose for clinical diagnostics.

We are looking for a MSCA candidate with interest in joining our multidisciplinary team and this challenging project, with expertise in deep convolutional neural networks (CNN) as pattern recognition systems to analyse optical textures dynamics.

PROJECT 2 – Protein and peptide engineering for bio-based materials – We are looking for a candidate with a strong background in biotechnology or bioengineering, preferentially with experience in bioinspired materials. For more information, please contact the PI.

SCIENTIFIC AREA WHERE THE PROJECT FITS BEST*

Information Science and Engineering (ENG)
Life Sciences (LIF)
Chemistry (CHE)

Scientific Area where the project fits best – Please select/indicate the scientific area according to the panel evaluation areas: Chemistry (CHE) • Social Sciences and Humanities (SOC) • Economic Sciences (ECO) • Information Science and Engineering (ENG) • Environment and Geosciences (ENV) • Life Sciences (LIF) • Mathematics (MAT) • Physics (PHY)