MARIE SKŁODOWSKA-CURIE POSTDOCTORAL FELLOWSHIPS 2021

EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS

HOST INSTITUTION

NOVA University Lisbon | School of Science and Technology
LAQV-REQUIMTE

RESEARCH GROUP AND URL

"Cultural Heritage and Responsive Materials" group, CHARM
https://laqv.requimte.pt/research/research-groups/112-cultural_heritage_and_responsive_materials

SUPERVISOR (NAME AND E-MAIL)

Luis C. Branco
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SHORT CV OF THE SUPERVISOR

Luis C. Branco is graduated in Chemistry from University of Lisbon (1998) and then he received in 2006 his PhD in Organic and Sustainable Chemistry (FCT-NOVA). He is currently Assistant Professor and Principal Researcher at the FCT-NOVA and LAQV-REQUIMTE, Portugal and his research interest are mainly focused in the development of Sustainable Chemical Processes and Applied Functional Materials including Task-specific Ionic Liquids and Deep Eutectic Solvents. He has published more than 140 papers, 12 book chapters and 12 patents (Sum of the Times Cited: >4900; Average Citations per Item: 35.8; h-index: 36). The Supervising experience includes orientation or co-orientation of 60 graduate students, 20 master students; 17 PhD students and 8 postdoctoral investigators. Funding Projects: 20 in total (8 as PI Coordinator); Ongoing Project: “Active Pharmaceutical Ionic Liquids as new platform for Effective Treatment of Tuberculosis (TB-ILs)” Ref. PTDC/QUI-QOR/32406/2017 (Approved; 2018-2021). My main scientific interests are focused in the development of Sustainable Chemistry and Applied Functional Materials including Ionic Systems for Sustainability. In particular working in a) Catalysis including photo-redox, nanocatalysis, asymmetric metal and organocatalysis; b) Applied and Functional Advanced Materials including Chromogenic (photo-, thermos- and electrochromic), Luminescent, rheological, magnetic, tribological materials as well as materials for energy devices and applications (batteries, solar cells, fuel cells); c) Pharmaceutical chemistry including pharmaceutical salts and formulations, contrast agents and luminescent probes for medical applications. My other activities include pedagogical activities: orientation of graduate, master and PhD students as well as doctoral researchers; several classes in Applied Chemistry, Biochemistry and Conservation and Restauration courses (2008-2016); Bioorganic Master (2011-2016); Doctoral Programmes (2014-2016). Additionally, Director of Solchemar Lda company as small Portuguese company founded in 2004 that develop and commercialize several types of sustainable products including ionic liquids, deep eutectic solvents, catalysts and nanomaterials (Solchemar is the biggest producer of ionic liquids from South Europe and top 10 from world).

5 SELECTED PUBLICATIONS

1. C.Florindo, Nathalie V.Monteiro, Bernardo D.Ribeiro, L.C.Branco, I.M.Marrucho Hydrophobic deep eutectic solvents for purification of water contaminated with Bisphenol-A; J. Mol. Liquids 2020, 297, 111841

2. Catarina Florindo; Francine Lima; Luís C. Branco; Isabel M. Marrucho. "Hydrophobic Deep Eutectic Solvents: A Circular Approach to Purify Water Contaminated with Ciprofloxacin". ACS Sustainable Chemistry & Engineering (2019): https://doi.org/10.1021/acssuschemeng.9b02658.

3. Pinto, M.I.; Salgado, R.; Laia, C.A.T.; Cooper, W.J.; Sontag, G.; Burrows, H.D.; Branco, L.; Vale, C.; Noronha, J.P. "The effect of chloride ions and organic matter on the photodegradation of acetamiprid in saline waters".

Journal of Photochemistry and Photobiology A: Chemistry 360 (2018): 117-124. http://www.scopus.com/inward/record.url?eid=2-s2.0-85046171353&partnerID=MN8TOARS.

4. Kamalanathan, I.; Petrovski, Z.; Branco, L.C.; Najdanovic-Visak, V.; "Novel aqueous biphasic system based on ethyl lactate for sustainable separations: Phase splitting mechanism". Journal of Molecular Liquids 262 (2018): 37-45. http://www.scopus.com/inward/record.url?eid=2-s2.0-85045745556&partnerID=MN8TOARS.

5. Florindo, C.; Branco, L.C.; Marrucho, I.M.; "Development of hydrophobic deep eutectic solvents for extraction of pesticides from aqueous environments". Fluid Phase Equilibria 448 (2017): 135-142. http://www.scopus.com/inward/record.url?eid=2-s2.0-85017563582&partnerID=MN8TOARS.

PROJECT TITLE AND SHORT DESCRIPTION

Sustainable approaches for Bioremediation of aquatic environments using ionic systems

Water pollution remains a top environmental concern globally. Through agricultural practices and industrial effluents, the pollutants can enter into water bodies with high environmental impacts (i.e., the bioaccumulation of emergent contaminants through the marine food chain has the potential to be devastating for organisms). State-of-the-art technologies for the remediation of polluted water bodies are essential for a sustainable future. In search of available, environmental-friendly remediation technologies, ionic systems based on ionic liquids and eutectic systems are particularly interested. The use of task-specific ionic liquids for liquid-liquid extraction, ABS processes and membrane technologies have been reported.
Eutectic systems are presented as sustainable and cheap solvents with possibility to integrate efficient water purification technologies.
This project will be focused on the application of ionic systems and other task-specific adsorbent materials (porous materials) for remotion micropollutants such as pharmaceutical drugs; pesticides; contaminants from plastics or metals from river or drinking water.

SCIENTIFIC AREA WHERE THE PROJECT FITS BEST*

Chemistry (CHE)