MARIE SKŁODOWSKA-CURIE INDIVIDUAL FELLOWSHIPS 2018

EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS

HOST INSTITUTION

School of Sciences and Technology | LAQV@REQUIMTE Research Unit

RESEARCH GROUP AND URL

CleanMIPTech @ Green Polymer Synthesis and Processing Lab
https://sites.fct.unl.pt/clean-mip-tech/home

SUPERVISOR (NAME AND E-MAIL)

Teresa Casimiro
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SHORT CV OF THE SUPERVISOR

T. Casimiro is co-author of 68 scientific refereed papers in international peer reviewed journals (65 in WoS; h-index: 20, h-i10=32, 910 citations, Academic Google: h-index: 25, h-i10: 39, 1270 citations), 32 papers in refereed conference proceedings and 3 in national journals, 4 book chapters, 12 invited oral communications, 34 oral communications and 62 poster communications, 4 patents and a provisional patent request (2018). All publications in the Web of Science list are classified as Q1.
Currently supervising 2 PhD students and one postdoc. Since 2003 she has supervised more than 40 undergraduate students, 2 postdocs and 2 PhD students (finished). Two postdoc researchers will also join the group for 3 years, in the aim of a recently approved project.

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SELECTED PUBLICATIONS

- Raquel Viveiros, Kal Karim, Sergey A. Piletsky, William Heggie and Teresa Casimiro, Development of a molecularly imprinted polymer for a pharmaceutical impurity in supercritical CO2: Rational design using computational approach, Journal of Cleaner Production 2017, 168, 1025-1031. https://doi.org/10.1016/j.jclepro.2017.09.026

- Raquel Viveiros, Francisco M. Dias, Luisa B. Maia, William Heggie and Teresa Casimiro, Green strategy to produce large core-shell affinity beads for gravity-driven API purification processes, J. Industrial and Engineering Chemistry 2017, 54, 341-349.

- R. Viveiros, M. Inês Lopes, William Heggie, Teresa Casimiro, Green approach on the development of lock-and-key polymers for API purification, Chemical Engineering Journal, 308, 2017, 229–239.

- Lourenço, R. Viveiros, V. D. B. Bonifácio, T. Casimiro, Supercritical CO2-assisted synthesis of an ultrasensitive amphibious quantum dot-molecularly imprinted sensor, RSC Advances, 2014, 4, 63338-63341.

- J. P. Ferreira, R. Viveiros, A. Lourenço, M. Soares da Silva, A. Rosatella, T. Casimiro, C. A. M. Afonso, Integrated desulfurization of diesel by combination of metal free oxidation and product removal by molecularly imprinted polymer, RSC Advances, 2014, 4, 54948-54952.

PROJECT TITLE AND DESCRIPTION

Development of molecular recognition polymeric matrices using clean technologies

The project aims to develop new polymeric matrices with molecular recognition ability by using a molecular imprinting technique in supercritical carbon dioxide. Supercritical fluid technology is a green technology that brings key features to the polymers such as high purity, which are obtained completely free of organic solvents, and ready-to-use materials by simple depressurization of the reactor at the end of polymerization, being the solvent - the carbon dioxide- released as gas.
Affinity cavities are built within the polymer which are complementary in size, conformation and functionality with the target molecule for which the affinity is wanted. Different applications have been explored such as sensors, drug delivery, chromatography, API purification, etc.
Thus, these synthetic engineered polymers are very promising in the replacement of natural and conventional affinity materials which are sensitive and expensive. New applications and novel synthetic approaches will be explored.

SCIENTIFIC REQUIREMENTS
The postdoc students with different backgrounds are welcome: chemical and biochemical engineering, material sciences, organic chemistry, pharmaceutics, etc.

SCIENTIFIC AREA WHERE THE PROJECT FITS BEST

Chemistry (CHE)