

## Abstract submission ISPPP 2020

### Theme:

1. Analytical detection technologies
2. **Continuous processing**
3. Fundamentals and modeling
4. Preparative separation technologies
5. products

**Abstract:** 250 palavras

**Title:** "Sustainable liquids support as a media for biocatalytic reactions using aqueous biphasic systems"

### Authors:

Leonor S. Castro<sup>1</sup>, Ana M. Ferreira<sup>1</sup>, Ana Isabel Valente<sup>1</sup>, Augusto Q. Pedro<sup>1</sup>, João A. P. Coutinho<sup>1</sup>, Mara G. Freire<sup>1</sup> and Ana P. M. Tavares<sup>1</sup>

<sup>1</sup>CICECO – Aveiro Institute of Materials, Department of Chemistry, Universidade de Aveiro, 3810-193 Aveiro, Portugal

Over the last few years a significant interest in the application of biocatalyst in several industries as an alternative to the commonly used chemical biocatalyst has emerged, since enzymes, such as laccase, allow for an improved, sustainable and biodegradable catalytic process partially due to their high specificity to its substrates. Nevertheless, its application can still be considered a costly process thus to overcome this shortcoming emerges the need for the enzyme reutilization employed in the catalytic reaction <sup>1</sup>. One of the alternatives is to implement aqueous biphasic systems (ABS), which are a biocompatible liquid-liquid extraction as a liquid support. Moreover, the introduction of ionic liquids (ILs) in ABS have shown promising results in the system overall performance and could potentially allow for an improved biocatalyst performance. Therefore, our goal was to form an ABS composed of cholinium-based ILs and polypropylene glycol (PPG 400) as novel liquid supports for enzymes, using laccase as models in order to evaluated the degradation of the textile dye Remazol Brilliant Blue R (RBBR) as well as the capacity to reutilized the biocatalyst for further applications.

Acknowledgements: This work was developed within the scope of the project CICECO-Aveiro Institute of Materials, UIDB/50011/2020 & UIDP/50011/2020, financed by national funds through the Portuguese Foundation for Science and Technology/MCTES and through the project "IL2BioPro" (PTDC/BII-BBF/030840/2017).

1. Datta, S., Christena, L. R. & Rajaram, Y. R. S. Enzyme immobilization: an overview on techniques and support materials. *3 Biotech* **3**, 1–9 (2013).
2. Cacace, D. N. & Keating, C. D. Biocatalyzed mineralization in an aqueous two-phase system: Effect of background polymers and enzyme partitioning. *J. Mater. Chem. B* **1**, 1794–1803 (2013).