6th edition of the International Conference on Materials & Environmental Science, ICMES-2023
June 7-11, 2023, Saïdia – Morocco

Porphyrin@nanomagnetic particles in advanced oxidation process and their impact on wheat exposure

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Abstract

Global water demand is expected to increase by 20-30% by 2050 [1]. One of the Sustainable Development goals for 2030 (SDG6) is "Ensure availability and sustainable management of water and sanitation for all" [1]. Reusing treated water from Waste Water Treatment Plants (WWTP) is a potential resource to provide safe and clean water for agricultural irrigation or urban purposes [2]. However, water reuse can pose risks to health primarily due to pathogenic microorganism (MO) present and to the presence of either disinfected agents or new nanodelivery approaches [3]. So, considering the efficiency of Photodynamic Inactivation (PDI) to eradicate MO [3] and the possibility of using immobilized photosensitizers (PS) indicate that photodynamic approach can be very attractive to eradicate MO from WW with sunlight. In this communication, the preparation and functionalization with porphyrin derivatives of nanostructured magnetic supports will be presented and their ability to inactivate MO [4-8] will be reported, as well as the effect of exposure of wheat plants to porphyrin@nanomagnetic particles to estimate the environmental impact of plants treated with water containing these nanomaterials.

Funding: This work received financial support from PT national funds (FCT/MCTES) through projects UIDB/50006/2020 and UIDP/50006/2020 and also through the project PREVINE – (FCT-PTDC/ASP-PES/29576/2017).

Acknowledgments: Thanks are due to the University of Aveiro and FCT/MCTES for the financial support to LAQV-REQUIMTE (UIDB/50006/2020 and UIDP/50006/2020) and to the FCT Project PREVINE – (FCT-PTDC/ASP-PES/29576/2017), through national funds (OE) and where applicable co-financed by the FEDER-Operational Thematic Program for Competitiveness and Internationalization-COMPETE 2020, within the PT2020 Partnership Agreement. Thank are also due to the Portuguese NMR and Mass Networks.

Recent Publications

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Biography

M. Amparo F. Faustino research interests are related with synthesis, reactivity, and characterization of tetrapyrrolic macrocycles and their functionalization with adequate structural features to be considered in medical and environmental applications namely in photodynamic therapy (PDT) of neoplastic tissues and photoinactivation of microorganisms. Additionally, the development of photochemical techniques for environmentally friendly approaches in the field of water treatment is presently one of her main goals. She received her doctoral degree in Chemistry in July 1999. She published more than 215 papers, 19 book chapters and 2 patents, h-index = 44 (6730 citations from Scopus). Since 2021 is President of the European Society for Photobiology (www.photobiology.eu) and since 2010 keep strong collaboration with Moroccan research groups in the field of organic synthesis and material chemistry.

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