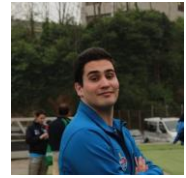


PhD Candidate Profile



Name: Pablo Santiago Espiñeira

Research Group (if relevant): Environmental Technologies and Industrial Resources

Research Centre (if relevant): Higher Technical School of Industrial Engineering

Department/School(s) (if relevant): Industrial Chemical Engineering and Environment

College: Technical University of Madrid

Supervisor(s): Jorge Jesús Rodríguez Chueca / Patricia García Muñoz

Funding body: Ministry of Science and Innovation. Government of Spain

Area (field) of study: Photo-assisted advanced oxidation processes for the disinfection and decontamination of aquaculture wastewater.

Thesis Title: “Application of advanced oxidation processes for the removal of Contaminants of Emerging Concern and Pathogens in aquaculture effluents”

PhD Candidate Profile

Abstract: In a context of increasing global population, as well as food demand, Recirculating Aquaculture Systems (RAS) emerge as a solution to provide humanity with a steady stream of food. However, this approach also poses new challenges, related to the concentration of volatile solids, nutrients, and contaminants of emerging concern (CECs) which are present in its effluents.

In this thesis, an innovative method for the removal of antibiotics, pathogens, and antibiotic resistance genes (ARGs) will be developed. This approach, based on the intensification of UV-C photo-assisted advanced oxidation processes, aims to the simultaneous removal of these pollutants, ensuring both mineralization of the organic matter and a reduction in the toxicity of the effluents.

Two different methodologies will be assessed: the employment of common oxidants, such as oxygen peroxide, peracetic acid, sodium hypochlorite and potassium persulphate/permanganate, in presence of UV-C radiation; and UV-C photocatalysis with several Ga, Ti and La-based catalysts. The effectiveness in terms of micropollutant removal, pathogen abatement and mineralization will be assessed in the laboratory scale, with the objective of a further scaling of the process in a pilot system.

Collaborations: N/A

Publications: N/A

Presentations: N/A