

**Name:**

Mateus Mestriner Pituco

Research Group (if relevant):

ALiCE- Associate Laboratory in Chemical Engineering

LSRE- Laboratory of Separation and Reaction Engineering and

LCM – Laboratory of Catalysis and Materials

Research Centre (if relevant):

N/A

Department/School(s) (if relevant):

Faculty of Engineering - Department of Chemical Engineering

College:

University of Porto

Supervisor(s):

Dr. Vítor Jorge Pais Vilar

Co-Supervisor(s):

Dra. Maria Francisca da Costa Moreira

Funding body:

FCT Ph.D. scholarship SFRH/BD/144673/2019

Area (field) of study:

Ozonation/water and wastewater treatment

Thesis Title:

Intensification of ozonation processes in a novel pressurized mili-reactor for water and wastewater treatment

Abstract:

Despite the wide application of ozonation to water/wastewater treatment, this technology remains very costly due to high ozone supply demands, the extended contacting time required in the reactor and the bulky size of the equipment. These disadvantages are associated with the low ozone mass transfer rates from gas to liquid phase, when using conventional gas-liquid contactors. This project proposes a disruptive reactor design for ozonation, a pressurized mili-reactor, based on the NETmix static mixer technology developed by LSRE-LCM team. The new compact ozonation reactor is expected to: i) enhance the ozone mass transfer from the gas phase to the liquid phase to 100% or very close to it, ii) intensify ozone reaction kinetics, and iii) improve selectivity, avoiding undesired by-products. Reactor efficiency will be evaluated for niche applications in the area of water and wastewater treatment, allowing the access to safe and affordable drinking water and the reuse of wastewater.

PhD Candidate Profile

Collaborations:

N/A

Publications:

N/A

Presentations:

4th Doctoral Congress in Engineering (DCE21), Symposium on Chemical and Biological Engineering, Porto, Portugal, 28-29th June 2021.

12th Micropol & Ecohazard Conference, Santiago de Compostela, Spain, 6-10th June 2022.

5th Iberoamerican Conference on Advanced Oxidation Technologies (V CIPOA), Cusco, Peru, 7-11th November 2022.

IOA Conference & Exhibition, EA3G2022, Toulouse, France, 28-30th November 2022.