

## PhD Candidate Profile

**Name:**

Rubén López Timoner

**Research Group:**

Advanced Oxidation Processes Group

**Research Centre:**

N/A

**Department/School(s):**

Department of Textile and Paper Engineering

**College:**

Universitat Politècnica de València (UPV)

**Supervisor(s):**

Dr. Antonio Arques Sanz

**Funding body:**

N/A

**Area (field) of study:**

Photochemical advanced oxidation processes (Photo-Fenton)

**Thesis Title:**

Photochemical processes for niche applications: improving efficiency of tertiary treatments, photocatalytic reduction of pollutants and decontamination of ballast water.

**Abstract:**

The objective of this thesis is the study of photochemical methods for the treatment of some niche effluents, namely: UVC-based tertiary treatments, photoreductive processes based on graphitic carbon nitrides ( $g\text{-C}_3\text{N}_4$ ) and based on UVC and vacuum ultraviolet (VUV) for remediation of marine effluents.

Firstly, improving the processes that take place in wastewater treatment plants (WWTP) is one of the points to be considered. For this purpose, UVC/ $\text{H}_2\text{O}_2$  treatment will be optimized for the elimination of contaminants of emerging concern (CECs) and disinfection of *Clostridium spp.*

Secondly, the use of photoreductive processes is studied through the implementation of graphitic carbon nitrides ( $g\text{-C}_3\text{N}_4$ ) as catalysts to eliminate those types of pollutants that are reluctant to oxidation, such as nitroaromatic compounds. The effect of oxygen availability, type of catalyst and sacrificial agents will be studied.



## PhD Candidate Profile

Finally, the main part of the thesis is based on the study of photochemical processes for decontaminate ballast water in highly saline environments. To achieve the removal of those type of pollutants (hydrocarbons and CECs) some photochemical AOPs will be tested, focusing mainly on the use of photo-Fenton based processes using UVC and VUV as irradiation source.

### Collaborations:

N/A

### Publications:

López-Timoner, R.; Mora, M.; Zuriaga, E.; Climent, J.; Santos-Juanes, L.; Amat, A.M.; Arques, A. UVC-Assisted Tertiary Treatments for the Removal of Pollutants of Emerging Concern in Real WWTP Matrices. *Water* 2023, 15, 882. <https://doi.org/10.3390/w15050882>

### Presentations:

Certificate of poster presentation and attendance to the 5th Iberoamerican Conference on Advanced Oxidation Technologies (CIPOA V) held on November 7-11, 2022 in Cuzco, Peru with the title "Decontamination of WWTP Effluents by UVC-Assisted Tertiary Treatments".

Certificate of participation in oral communication with the title "Application Of Photocatalytic Processes For Industrial Wastewater Decontamination: Elimination Of CEC's Using Catalysts Based On Graphitic Carbon Nitride" at the coordination meeting of the research project CalypSol, held on September 7-8, 2022 in Riópar, Castilla la Mancha.

Certificate of poster presentation in the 11th European Conference on Solar Chemistry and Photocatalysis: Environmental Applications (SPEA11) held from June 6th to 10th, 2022 in Turin, Italy with the title "UVC-Assisted Tertiary Treatments For The Removal Of Pollutants Of Emerging Concern In Real WWTP Matrices". ISBN 979-12-210-0970-5. PO029. Pages 475-476.

Certificate of poster communication and attendance certificate at the XIV Congreso De La Mesa Española De Tratamiento De Aguas (META) held on June 1-3, 2022 in Seville, Spain with the title "UVC Assisted Tertiary Treatments for the removal of emerging pollutants in real WWTP matrices".

Certificate of poster communication and attendance at the XIV Congreso De La Mesa Española De Tratamiento De Aguas (META) held on June 1-3, 2022 in Seville, Spain with the title "Evaluation of the degradation of polyamide 6.6 microplastic with a photo-Fenton treatment".

Certificate of participation in the congress 1st Workshop: "Novel Nanomaterials for Photocatalytic Applications" held from November 21 to 22, 2021 in Alicante, Spain with the paper "Novel Trends in Photo-Fenton Process: Towards Application in Mild Conditions and Roles of Water Matrix".