

## PhD Candidate Profile

**Name:**

Sonia Guerra Rodríguez

**Research Group (if relevant):**

Tecnologías ambientales y recursos industriales

**Research Centre (if relevant):**

N/A

**Department/School(s) (if relevant):**

Department of Chemical & Environmental Engineering  
Escuela Superior de Ingenieros Industriales

**College:**

Universidad Politécnica de Madrid

**Supervisor(s):**

Jorge Jesús Rodríguez Chueca  
M<sup>a</sup> Encarnación Rodríguez Chueca

**Funding body:**

Programa Propio of Universidad Politécnica de Madrid

**Area (field) of study:**

Wastewater regeneration by advanced oxidation processes

**Thesis Title:**

Advanced treatments for wastewater regeneration

**Abstract:**

Because of the global water scarcity, and the increase of hydric stressed regions, as Spain, the wastewater regeneration has become a priority. Different threats, such as pathogen germs, antibiotic resistant bacteria, micropollutants, microplastics, etc., put human and environmental health at risk. In this scenario, it is compulsory the assessment of these threats and the search of coupling systems able to solve them, obtaining a safe water for consumption according to the indications of RD 1620/2007.

The main goal of this thesis is to go in depth the study of different advanced oxidation processes for the coupling removal of micropollutants and pathogens microorganisms to get a safety reclaimed wastewater. According to this main goal, different transversal objectives are suggested:

- Dissolved micropollutants removal, in parallel with disinfection treatments.
- In-depth study of the microbial inactivation and micropollutants removal mechanisms.



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- Study the scalability of several treatments, and application in a real facility.

### Collaborations:

N/A

### Publications:

Rodríguez-Chueca, J., Guerra-Rodríguez, S., Ruez, J.M., López-Muñoz, M.J., Rodríguez, E. (2019) Assessment of different iron species as activators of  $S_2O_8^{2-}$  and  $HSO_5^-$  for inactivation of wild bacteria strains. *Applied Catalysis B: Environmental* 248, 54-61.

Guerra-Rodríguez, S., Rodríguez, E., Singh, D.N., Rodríguez-Chueca, J., (2018) Assessment of sulfate radical-based advanced oxidation processes for water and wastewater treatment: A review. *Water (Switzerland)*, 10 (12), 1828

### Presentations:

III Summer School of the European PhD School on Advanced Oxidation Processes. Alcoy, Spain. 3-7 June 2019

XXIV Encontro Luso-Galego de Química. Porto, Portugal. 21-23 November 2018

10th European meeting on solar chemistry and photocatalysis: environmental applications (SPEA10). Almería, Spain, 4-8 June 2018