PhD Candidate Profile

Name:
Mayra Rodriguez Peña

Research Group (if relevant):
Laboratory of Electrochemical Engineering and Environmental

Research Centre (if relevant):
Faculty of Chemical

Department/School(s) (if relevant):
Department Chemical Engineering

College:
University of Castilla La-Mancha

Supervisor(s):
Dr. Manuel A. Rodrigo Rodrigo

Funding body:
CONACYT

Area (field) of study:
Removal of pesticides by Electrochemical Advanced Oxidation Processes

Thesis Title:
Pesticides Degradation by Integrated Advanced Oxidation Process, Electrofenton-Ozonation-Oxidation

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AOPs PhD School

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Abstract:

The use of pesticides has become an indispensable resource for the control of living organisms that transmit diseases, and, above all, that produce damage to crops. These substances control the attack on crops, reduce the economic losses they produce and help to cope with the current high demand for food (due to the exponential increase suffered by the world population in recent centuries). According to the reports of the FAO (Food and Agriculture Organization of the United Nations), despite the use of pesticides, a good part of the crops are lose, reaching these losses to assume up to 25% in developed countries. All this leads to frequent and excessive use of pesticides, becoming frequent and to their waste as a source of point and/or diffuse contamination because, after of being applications to the ground or reaching it transported to systems to which they were not intended, such as groundwater and surface water.

Pesticide contamination poses a significant danger to the environment, given the high toxicity and persistence of many of these compounds. This problem has aroused interest in studying in depth the behavior of these compounds in the soil, and how they can minimize their impact on human health and the environment.

Over the last decades techniques have been developed to reduce the effect pesticide contaminant, and among them have been found that the addition of organic waste to the soil, although it does not always constitute a guarantee of control, reduce the mobility and transport of these substances in the environment.

Collaborations:

Dr. Carlos Eduardo Barrera Díaz

Departamento de Química Ambiental, Facultad de Química. Universidad Autónoma del Estado de México, Paseo Colon y Paseo Tollocan s/n, 50120, Residencial Colón, Toluca, México.

Centro Conjunto de Investigación en Química Sustentable, UAEM-UNAM, Carretera Toluca-Atlacomulco, Km 14.5, Campus San Cayetano, C.P. 50200, Toluca, Estado de México, México

Publications:

C.E. Barrera-Díaz, B.A. Frontana-Uribe, **M. Rodriguez-Peña**, J.C. Gomez- Palma, B. Bilyeu, Integrated advanced oxidation process, ozonation-electrodegradation treatments, for nonylphenol removal in batch and continuous reactor, Catal. Today. 305 **(2018)** 108–116.

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M. Rodríguez-Peña, C.E. Barrera-Díaz, B.A. Frontana-Uribe, G. Roa-Morales, Nonylphenol Degradation by Simultaneous Electrooxidation on BDD Anode and Oxidation by H2O2 in a Continuous Flow Electrochemical Reactor, Int. J. Electrochem. Sci. 14 **(2019)** 4409–4419.

Presentations:

International Symposium on Advances in Hydroprocessing of Oil Fractions ***(2017)***.
Ciudad de México, México. Poster: Integrated Advanced Oxidation Process, Ozonation-Electrodegradation Treatments, for Nonylphenol Removal in Batch and Continuous Reactor.

XXIII Congreso de la Sociedad Iberoamericana de Electroquímica SIBAE ***(2018)***.
Cusco, Perú. Oral: Tratamiento electroquímico del Nonilfenol en un reactor tipo celda DiaClean, acoplando peróxido de hidrógeno como agente oxidante.

XXIV Congreso Nacional de la Sociedad Mexicana de Electroquímica ***(2019).***
Santiago de Queretaro, Queretaro, México. Oral: Degradación de Endosulfan, mediante tratamiento acoplado electrooxidación-ozonación (DDB/O_3).

Simposio Interno del Centro Conjunto de Investigación en Química Sustentable UAEMéx-UNAM ***(2019).***
Toluca, Estado de México, México. Poster: Propuesta de tratamiento acoplado electrofencon-electrooxidación-ozonación (EF/DDB/O3) para plaguicidas.