PhD Candidate Profile

Name:

Diego Alejandro Pino Sandoval

Research Group (if relevant):

Laboratory of photocatalysis and environmental electrochemistry

Research Centre (if relevant):

N/A

Department/School(s) (if relevant):

Faculty of Chemical Sciences

College:

Universidad Autónoma de Nuevo León, Mexico

Supervisor(s):

Professor Ma. Aracely Hernández Ramírez.

Funding body:

CONACYT (National Council for Science and Technology) Scholarship

Area (field) of study:

Desinfection of pathogenic agents in water by advanced oxitadation processes

Thesis Title:

Comparative study of pathogenic agents inactivation in water by heterogeneous photo-Fenton and photocatalysis using Ag/Cu co-doped TiO_2

Abstract:

In recent decades, global concern has grown over the depletion of fresh water available for human consumption, industrial and agricultural use, due to the excessive increase in population, economic development and poor management. Thus, has caused great risks for people and animals, because there are different pathogenic microorganisms that can subsist and reproduce in water. The pathogenic agents that can be transmitted through contaminated water are diverse in terms of their characteristics, behavior and resistance, being the techniques of elimination of microorganisms that are currently used are physicochemical treatments such as chlorination, ozonation or UV radiation. However, important drawbacks have been found in its use.

Therefore, the development of alternative technologies has been promoted to comply with water quality standards for reuse and purification, due to the inefficiency or drawbacks generated by current treatments. Among the different alternatives for water treatment, advanced oxidation processes (AOPs) have proven to be efficient and environmentally friendly disinfection methods. Among these, heterogeneous photocatalysis and photo-

Fenton have emerged as promising techniques for the elimination of microorganisms in various aqueous matrices, including various types of bacteria, fungi, viruses and protozoa.

Therefore, in this work will be carried out the elimination of pathogens present in water, using solar photocatalytic processes such as heterogeneous photocatalysis with the Ag/Cu-TiO_2 catalyst and the photo-Fenton heterogeneous process with iron oxide at neutral pH , using as model microorganisms *Escherichia coli* and *Salmonella* spp.

Collaborations:

- M. Ignacio Maldonado**,** Plataforma Solar de Almería, Almería, Spain**.**

Publications:

N/A

Presentations:

- Degradation of phenol by Electro-Peroxone process. **250th American Chemical Society National Meeting & Exposition** (2015, August). Boston, U.S.

- Degradation and Mineralization of Three Drugs of Different Therapeutic Groups by Solar Heterogeneous Photocatalysis. **IV International Congress of Chemistry and Green Engineering** (2017, September). Monterrey, México.

- Degradation of atenolol, acetaminophen and sulfamethoxazole in distilled water and hospital wastewater by solar heterogeneous photocatalysis. **3rd Iberoamerican Conference on Advanced Oxidation Technologies (III CIPOA)** (2017, November). Guatape, Colombia.

- Photocatalytic Oxidation Of Drug Mixture In Distilled Water And Hospital Wastewater Under Simulated And Natural Solar Radiation. **10th European meeting on Solar Chemistry and Photocatalysis: Environmental Applications (SPEA10)** (2018, June). Almería, Spain.