Berenice Angel Hernandez, Ind Chem 2018, Volume 4
DOI: 10.4172/2469-9764-C1-009

17th International Conference on
Industrial Chemistry and Water Treatment

May 21-22, 2018 | New York, USA

D-TiO_2/ZnO-degradation of contaminants present in residual water using TiO_2/ZnO catalysts

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Degradation of contaminants present in residual water using TiO_2/ZnO catalysts (D-TiO_2/ZnO): It is an experimental work which aims to degrade the contaminants present in the water from a municipal wastewater treatment plant. This objective is achieved through the use of UV radiation and TiO_2/ZnO catalysts. The catalysts used were synthesized using the sol-gel method. The sol-gel method was chosen for the synthesis because this method achieves a high homogeneity and purity of the materials besides presenting a great thermal stability. Once the catalysts were obtained their characterization was carried out by the methods of X-ray diffraction, scanning electron microscopy and energy dispersive spectroscopy. Degradation tests are carried out on the wastewater with the catalysts and an 850mL batch photoreactor composed of a medium pressure mercury vapor lamp which emits ultraviolet radiation with a region between 200-400nm. To follow up the photodegradation, samples were taken and analyzed in a UV spectrophotometer. Physico-chemical, microbiological and genotoxicity analyzes are carried out before and after photodegradation to compare the results and verify that the degradation has been successful. The results of the tests showed an evident decrease in the color, turbidity, solids, heavy metals, chemical oxygen demand and biological demand of oxygen present in the residual water sample.

Biography

Berenice Angel Hernandez is currently pursuing her Master's degree in Benemerita Autonomous University of Puebla, Mexico. She has published one paper and realized a stay of investigation in the PSA, Spain.

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