

Photolytic decomposition of detergent contaminated wastewater under various ultraviolet irradiation

ABSTRACT

Photodegradation process has emerged as one of the forefront technology to remediate nonbiodegradable organics in contaminated wastewater. In this study, the photodegradation of detergent simulated wastewater was investigated using three types of UV lamps emitting UV-A, UV-B, UV-C and a solar lamp emitting solar irradiation. Photodegradation processes were performed in a batch system by exposing UV light to the simulated detergent wastewater for duration of 5 hours. The percentage of degradation was obtained from the absorbance value measured using a UV-Vis spectrophotometer. The degradation parameters studied in this work were the type of irradiation wavelength, experimental duration, and initial detergent concentration of the simulated detergent wastewater. It was determined that UV-C irradiation proved to be the most effective irradiation light source for the photocatalytic decomposition of detergent contaminated wastewater. It was also determined that the longer the exposure of simulated detergent wastewater solution to UV irradiation, the greater the extent of degradation observed. The degradation efficiency was inversely proportional to the initial concentration of detergent solution. Optimisation of the photodegradation treatment process of the detergent simulated wastewater was conducted successfully and the results will be presented during the conference.