

ABSTRACT

This study was aimed to perform photodegradation of methyl orange (MO) with the use of urea derived graphitic carbon nitride (g-C₃N₄). It was observed that calcination temperatures had strong influence on the photodegradation process for g-C₃N₄ synthesis and an impactful improvement can be made in MO dye degradation due to temperature changes. Photocatalyst g-C₃N₄ was prepared at variable temperatures and 550°C was observed to be the best suitable amongst the different variables used during the laboratory testing. Three characterization techniques including UV-VIS spectroscopy, SEM, and XRD analysis were performed to the photocatalytic activity of g-C₃N₄. UV-VIS analysis indicated that photodegradation was started only by the samples prepared above 450°C calcination temperature and the dye degradation was found 40% (maximum) by the photocatalyst prepared at 550°C. The optical and morphological properties based on calcination temperature showed sudden decline in optimal band-gap energy value of the g-C₃N₄ synthesized at temperature of 550 °C. Thus, this study is intended to focus that g-C₃N₄ can proved to be as an efficient and active photocatalytic agent for the photodegradation of MO.