

Abstract

With passing time the level of pollutants in our environment are rising and this has caused damage to many natural resources. One of the natural resources is drinkable water. With time, the level of clean drinkable water is depleting due to increase in effluents from industries, schools and mills and this has caused an alarm among people. In order to mitigate the level of water waste, we have aimed to develop and characterize a system to remove organic dyes that are discharged from textile industries. Our aim was to synthesize platinum loaded ceria system loaded onto chitosan (Pt-CeO₂/CS) to carry out photodegradation studies of Methyl orange dye. Optical band gap, Raman and XRD techniques were performed to analyze and confirm the synthesis of our compound. An optical band gap of 4.06eV was obtained and compound confirmation was achieved using Raman and XRD. The degradation efficiency achieved with Pt-CeO₂/CS was 84.2%. We also made photodegradation studies of Platinum loaded on to chitosan and ceria loaded onto chitosan for comparative studies with our compound of concern.