

Facile biogenic-chemical route for the synthesis of thermally stable and visible light active Ag@TiO₂/polyaniline nanocomposite

Mohd Omaish Ansari, Mohammad Mansoob Khan,
Sajid Ali Ansari, *
Yeungnam University
(mhcho@ynu.ac.kr*)

Ag@TiO₂/Pani nanocomposite was prepared by the in-situ oxidative polymerization of aniline in the presence of Ag@TiO₂ nanocomposite, which was rather obtained via a biogenic route. The synthesized Ag@TiO₂/Pani nanocomposite was confirmed various characterization techniques. The Ag@TiO₂/Pani nanocomposite was doped with HCl/p-toluene sulfonic acid to render it conducting. An analysis of the thermoelectrical behavior using a cyclic aging technique showed that the electrical conductivity and thermal stability got improved after the incorporation of Ag@TiO₂ inside the Ag@TiO₂/Pani nanocomposite system. Photocatalytic studies of the Ag@TiO₂/Pani nanocomposite revealed superior photodegradation properties in comparison to Pani towards the degradation of methylene blue and brilliant blue under visible light. Electrochemical impedance spectroscopy and linear sweep voltammetry under dark and visible light irradiation also supported the visible light photocatalytic activity of Ag@TiO₂/Pani due to a decrease in the electron transfer resistance resulting in an increase in photocurrent.