

Photocatalytic properties of hybrid materials based on a multicharged polymer matrix with encored TiO₂ and noble metal (Pt, Pd or Au) nanoparticles

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Abstract

© The Royal Society of Chemistry and the Centre National de la Recherche Scientifique 2020. In this study, we report a synthesis of new nanocomposites, wherein TiO₂ is introduced into multicharged polymeric matrix and covered with noble metals (Pt, Pd or Au) for the photocatalytic application. A photocatalytic activity investigation was performed by studying the degradation of methylene blue. It revealed that all obtained nanocomposites demonstrate enhanced photocatalytic ability when compared to pure TiO₂, under both UV (24 °C) and solar light (−2 °C). The morphology and catalytic properties of the composites depend on the noble metals. The kinetic speed value of photodegradation was found to increase in the following sequence: TiO₂ < TiO₂-NPst ≈ Pd-TiO₂@NPst < Pt-TiO₂@NPst ≈ Au-TiO₂@NPst.

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