عنوان مقاله:

A new Gadolinium (III) coordination complex as an efficient photosensitizer forenhancing the visible-light driven photocatalytic activity of a TiO۲/rGOnanocomposite for the degradation of acetaminophen

محل انتشار:

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خلاصه مقاله:

Narrow solar-light response range and rapid charges recombination are the main technical barriers in TiO۲photocatalysis technology. To overcome these restrictions, this work synthesized a novel binuclearGadolinium (III) coordination complex, [Gd۲(DPDB)۶(DMF)۶(H۲O)۲], which was used as an inorganic sensitizerfor boosting the visible light-harvesting and quantum efficiency of TiO۲ supported-reduced graphene oxide(rGO) nanocomposite. The prepared nanohybrid (Gd-CMP/TG) revealed significantly enhanced visible-lightinducedphotocatalytic activity for degradation of acetaminophen (ACT). The complete removal of ۱۰ mg/LACT was achieved over Gd-CMP/TG, and the corresponding rate constant of ACT degradation of nanohybridwas ۴۰–fold higher than that of bare TiO۲. In prepared ternary nanohybrid, metal-coordination sensitizer (Gd-CMP) acted as an electron donor, and at the same time, rGO served as an electron acceptor, and thesynergistic effect between them efficiently enhanced charges separation and inhibited e/h pair recombinationin the hybridized species

کلمات کلیدی:

Gadolinium, Coordination complex, Sensitizer, Photocatalytic, Light-harvesting

لینک ثابت مقاله در پایگاه سیویلیکا: