Patent Search

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Abstract:

Three-dimensional lotus flower model CuO (L-CuO) was successfully prepared and fabricated carbon dots (CDs) on L-CuO for the study of photocatalysis of 4-nitroph and antibacterial activity. The L-CuO@CDs were characterized by UV–visible absorption spectroscopy, fluorescence spectroscopy, FTIR, XRD, FE-SEM and TEM. The XRD the crystalline morphology of L-CuO and FESEM showed the formation of lotus flower model structure L-CuO@CDs. The 3.0 wt % CDs loaded L-CuO shows greater ph activity of 4-NP compared to pure L-CuO and CDs. The enrichment was attributed to stronger visible light absorption ability and effective photogenerated charge sep CuO@CDs nanocomposites. The CDs were finely fused on the surface of the L-CuO, which helps in electron transfer from CDs to L-CuO and leading to the enhanceme photocatalytic activity. The L-CuO@CDs nanocatalyst has good reusability in the cyclic degradation of 4-nitrophenol (4-NP) and antibacterial activity. Therefore, the pr CuO@CDs nanocatalyst is a promising photocatalyst for treating wastewater that contains organic pollutants and antibacterial activity.

Complete Specification

Description:Field of invention:

[0001] The present disclosure relates to developing a three-dimensional lotus flower model CuO (L-CuO) was prepared and fabricated carbon dots (CDs) on L-CuO f study of photocatalysis of 4-nitrophenol (4-NP) and antibacterial activity. The 3.0 wt % CDs loaded L-CuO shows greater photocatalytic activity of 4-NP compared to CuO and CDs. The enrichment was attributed to stronger visible light absorption ability and effective photogenerated charge separation of L-CuO@CDs nanocompc The CDs were finely fused on the surface of the L-CuO, which helps in electron transfer from CDs to L-CuO and leading to the enhancement of photocatalytic activity CuO@CDs nanocatalyst has good reusability in the cyclic degradation of 4-nitrophenol (4-NP) and antibacterial activity. Therefore, the present invention of L-CuO@C nanocatalyst is a promising photocatalyst for the treatment of wastewater that contains organic pollutants and antibacterial activity.

Background of invention:

[0002] Water is an essential substance for all life on earth and a precious resource for human civilization. Today, a wide range of toxic and hazardous substances are continually being released into the surrounding water bodies due to lack of effective effluent treatment at the source [1]. Currently, phenolic compounds are one of most environmental water pollutants and its discharges from industrial run-off (petrochemical, petroleum, pharmaceutical, coal conversion, resin industries) and ch fertilizers. These are considered as primary pollutants, being harmful to organisms at very low concentrations. It's also often highly toxic, carcinogenic, mutagenic in and can even bio-accumulate in the food chain [2]. However, in daily human life, microbial effluence on water poses a major global challenge for the 21st century [3 protect drinking water from disease-causing organisms, or pathogens, water suppliers often add a disinfectant, such as chlorine, to drinking water. However, disinfe practices can be complicated because of certain microbial pathogens. In the past few decades with the help of nanoscience and nanotechnology, metal nanoparticl

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