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## A novel n-CeO<sub>2</sub>/n-CdO heterojunction nanocomposite for enhanced photodegradation of organic pollutants under visible light irradiation(Article)

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### Abstract

In this study, a series of novel visible light driven n-CeO<sub>2</sub>/n-CdO heterojunction (CeO<sub>2</sub>/CdO) nanocomposites were successfully fabricated by simple ultrasonication method. Several characterization tools including X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM) and UV-vis diffuse reflectance spectroscopy (UV-DRS), etc., were utilized to investigate the physicochemical properties of the catalyst and confirm the formation of heterojunction. Under visible light irradiations, the photocatalytic activities of the as-prepared CeO<sub>2</sub>/CdO nanocomposites were evaluated by degrading of Congo red (CR) and Rhodamine B (RhB) solutions. As a result, the CeO<sub>2</sub>/CdO (mass percentage ratio 1:3) nanocomposite displays remarkable performance for CR and RhB degradation. The enhancement in the photocatalytic performance of CeO<sub>2</sub>/CdO (1:3) nanocomposite can be attributed not only to the strong visible-light absorption region, separating the photogenerated electron-hole pairs but also to the formation of n-n type heterojunction. The results also indicate that the CeO<sub>2</sub>/CdO (1:3) nanocomposite has good stabilization and high reusability. In addition, the mechanism is proposed for the coupled semiconductors and possible reasons for the enhancement of visible-light photocatalytic efficiency are also discussed. This work can provide a new gateway to fabricate visible photocatalysts and promising candidate catalysts for poisonous wastewater treatment in the near future.

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### Author keywords

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Cited by 23 documents

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