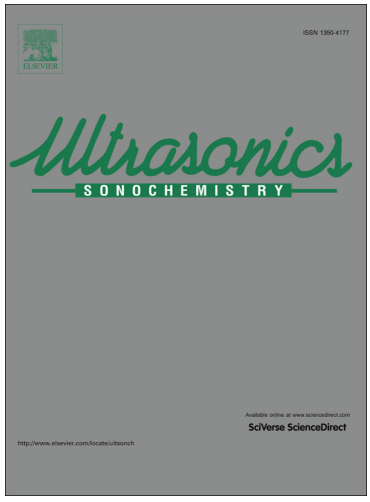

Review

A review on heterogeneous sonocatalyst for treatment of organic pollutants in aqueous phase based on catalytic mechanism

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A review on heterogeneous sonocatalyst for treatment of organic pollutants in aqueous phase based on catalytic mechanism

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Abstract

Heterogeneous sonocatalysis, as an emerging advanced oxidation process (AOP), has shown immense potential in water treatment and been widely demonstrated to remove persistent organic compounds in the past decade. The present article aims to provide a comprehensive review on the development of a heterogeneous catalyst for enhancing the ultrasonic degradation rate of organic pollutants from a viewpoint of sonocatalytic mechanism. The rational design and fundamentals for preparing sonocatalysts are presented in the context of facilitating the heterogeneous nucleation and photo-thermal-catalytic effects as well as considering the mechanical stability and separation capacity of the heterogeneous catalyst. In addition, some new trends, ongoing challenges and possible methods to overcome these challenges are also highlighted and proposed.

Keywords: Sonocatalysis, organic pollutant, sonocatalytic mechanism, heterogeneous nucleation, photo-thermal-catalytic effect.