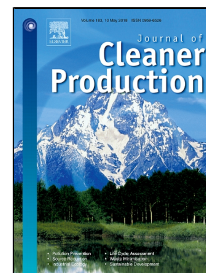


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Removal of Congo red dye from aqueous medium by its catalytic reduction using sodium borohydride in the presence of various inorganic nano-catalysts:

A review

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Abstract

Congo red is highly toxic and carcinogenic anionic dye. Its removal from aqueous medium by chemical reduction method using sodium borohydride as reducing agent in the presence of various nano-catalytic systems has been widely reported in literature during last ten years. This review article focuses on recent research of designing of various metal nanoparticles catalysts reported for catalytic reduction of Congo red by sodium borohydride (NaBH₄). Different nano-catalytic systems used for reduction of Congo red and their division on the basis of nature of metal nanoparticles and composition of supporting materials has been described critically. Advantages and disadvantages of different nano-catalysts used for reduction of Congo red and their capability to reduce Congo red present in industrial wastewater has been elaborated. An overview of different analytical techniques used for characterization of nano-catalytic systems reported for reduction of Congo red dye has been provided. Mechanism of chemical reduction of Congo red in the presence of nano-catalysts has been described critically with the help of recent literature.

Keywords: Congo red; chemical reduction; NaBH₄; nanotechnology; catalysis

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