



Morphologically controlled synthesis of porous Mn₂O₃ microspheres and their catalytic applications on the degradation of methylene blue

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ABSTRACT

Porous Mn₂O₃ microspheres are controllably synthesized by selectively etching MnCO₃ precursor with HCl solution. Morphologies and microstructures of Mn₂O₃ microspheres are analyzed by SEM, TEM, XRD, and N₂ sorption technique. The catalytic performances of Mn₂O₃ microspheres for the degradation of methylene blue (MB) are investigated, and the reaction kinetics of MB degradation is also studied. The results show it is feasible to control the morphologies of Mn₂O₃ microspheres by adjusting the concentration of HCl solution, and the well-developed porous Mn₂O₃ microspheres demonstrate good potential on MB degradation. The degradation reactions follow the pseudo-first-order kinetic model, and the degradation capabilities for MB are great dependent on BET surface areas and pore volumes of Mn₂O₃ microspheres.

Keywords: Porous; Mn₂O₃; Nanostructures; Degradation

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