Magnetic pomelo peel as a new absorption material for oil-polluted water

Junchen Zou, Wenbo Chai, Xiaoyan Liu*, Beibei Li, Xinying Zhang, Tiantian Yin

College of Environmental and Chemical Engineering, Shanghai University, 99 Shangda Road, Shanghai 200444, P.R. China, Tel. +15036065609; email: junchen526@163.com (J. Zou), Tel. +18818215695; email: 526203314@qq.com (W. Chai), Tel. +862166137767; email: lxy999@shu.edu.cn (X. Liu), Tel. +18818216331; email: 743421914@qq.com (B. Li), Tel. +18917802319; email: 864354276@qq.com (X. Zhang), Tel. +18101032207; email: 249339327@qq.com (T. Yin)

Received 13 August 2014; Accepted 5 May 2015

ABSTRACT

Magnetic pomelo peel (MPP) with high oil sorption capacity was prepared by solvothermal method. The characteristics of MPP were manifested by FTIR, SEM, XRD, and vibrating sample magnetometry. Adsorption kinetics and equilibrium of diesel from aqueous solution on MPP were studied in a batch process. The kinetic studies showed good correlation coefficients for the pseudo-second-order kinetic model, and the equilibrium process was well described by the Freundlich isotherm model. The maximum sorption capacity of MPP was 27.98 g/g for diesel at 30°C. The results in this study indicated that MPP was an attractive candidate for removing oil from aqueous solutions.

Keywords: Pomelo peel; Magnetic material; Oil spill; Sorption

*Corresponding author.

1944-3994/1944-3986 © 2015 Balaban Desalination Publications. All rights reserved.