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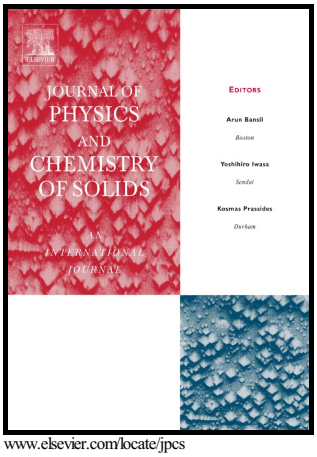

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Effective Adsorption of Phenolic Compound from Aqueous Solutions on Activated Semi Coke

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Abstract

Activated Semi coke was prepared by KOH activation and employed as adsorbent to study adsorption function of phenolic compound from aqueous solutions. The adsorption result showed that the adsorption capacity of the activated semi coke for phenolic compound increased with contact time and adsorbent dosage, and slightly affected by temperature. The surface structure property of the activated semi coke was characterized by N_2 adsorption, indicating that the activated semi coke was essentially macroporous, and the BET surface area was 347.39 $m^2 \cdot g^{-1}$. Scanning electron microscopy indicated that the surface of the activated semi coke had a high developed pore. The adsorption kinetics were investigated according to pseudofirst order, pseudosecond order and intraparticle diffusion, and the kinetics data were fitted by pseudosecond order model, and intraparticle diffusion was not the only rate-controlling step. Adsorption isotherm was studied by Langmuir, Freundlich, Temkin, Redlich-Peterson, Sips and Toth models. The result indicated that adsorption isotherm data could fit well with Langmuir, Redlich-Peterson, Sips and Toth models.

Keywords: Adsorption, Phenolic Compound, Modification, Coal-based, Activated Semi Coke

1. Introduction

Industrial wastewater containing phenolic pollutants was especially harmful because