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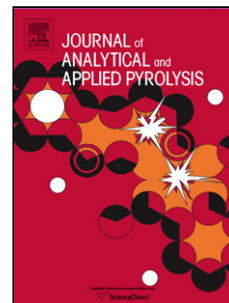
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Enhanced Hydrophobicity of Pyrolyzed Rice Husks by Modifying: Factor of Effectiveness

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Abstract

Carbon/SiO₂-containing natural composite material was obtained by slow pyrolysis of rice husks at 350°C. The pyrolyzed rice husks acquired structural and surface characteristics which rendered them a suitable material for the purification of waters from crude oil. In order to improve the adsorption characteristics of the pyrolyzed rice husks they were modified with: 5% H₂SO₄ solution, 1M 12-stearic acid and hydroxystearic acid, as well as with different amounts of fluids extracted with acetone from the solid pyrolysis residue. A comparative assessment of the effect of modifiers and fluids on the sorption efficiency of the pyrolyzed rice husks toward oil and water was made. On the basis of the results obtained the factor of effectiveness of the adsorbent was determined as a quantitative measure of the efficacy of materials used for cleaning spills of oil and oil products from water surfaces.

Highlights

Sorption characteristics of pyrolyzed rice husks can be enhanced by modification

The dilute sulfuric acid is not suitable modifier for pyrolyzed rice husks

The factor of effectiveness is a quantitative measure for the quality of oil sorbent

Keywords: Pyrolysis; Modified rice husks; Oil spillage; Adsorption; Sorption capacity; Hydrophobicity

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