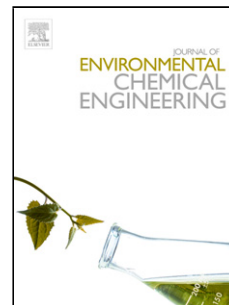


Accepted Manuscript

Title: Valorization of coffee grounds into activated carbon using physic-chemical activation by KOH/CO₂

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PII: S2213-3437(17)30474-8
DOI: <http://dx.doi.org/10.1016/j.jece.2017.09.036>
Reference: JECE 1884



To appear in:

Received date: 13-7-2017
Revised date: 16-9-2017
Accepted date: 19-9-2017

Please cite this article as: H.Laksaci, A.Khelifi, B.Belhamdi, M.Trari, Valorization of coffee grounds into activated carbon using physic-chemical activation by KOH/CO₂, Journal of Environmental Chemical Engineering <http://dx.doi.org/10.1016/j.jece.2017.09.036>

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Valorization of coffee grounds into activated carbon using physic-chemical activation by KOH/CO₂

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Hgighlights

- Activated carbons synthesized by a physic-chemical method
- Activated carbons with high microporosity were obtained.
- CO₂ enhances slightly the porosity of activated carbons.
- Phenol and methylene blue were used to evaluate the adsorption capacity of activated carbons.

Abstract

Coffee grounds were employed for the synthesis of activated carbons (ACs) by combined activation with CO₂ and KOH. The influence of CO₂ on the morphological properties and the sorption capacities of adsorbents prepared for phenol (phOH) and methylene blue (MB) was studied. The powders were investigated by infrared spectroscopy, N₂ isotherms and scanning electron microscopy. The activation by KOH under CO₂ flow slightly improves the porous structure (pore volume and specific surface area). The Langmuir isotherm provides a good correlation for both phenol and methylene blue and the adsorption kinetics obey a pseudo-second-order kinetic.

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