

Adsorption of Phenolic Compounds on Activated Carbon DSAC36-24

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Abstract : Activated carbon DSAC36-24 is adsorbent materials, characterized by a specific surface area of $548.13 \text{ m}^2/\text{g}$. Their manufacture uses the natural raw materials like the nucleus of dates. In this study the treatment is done in two stages: A chemical treatment by H_3PO_4 followed by a physical treatment under nitrogen for 1 hour then under stream of CO_2 for 24 hours. A characterization of the various parameters was determined such as the measurement of the specific surface area, determination of pHPZC, bulk density, iodine value. The study of the adsorption of organic molecules (hydroquinone, paranitrophenol, 2,4-dinitrophenol, 2,4,6-trinitrophenol) indicates that the adsorption phenomena are essentially due to the van der Waals interaction. In the case of organic molecules carrying the polar substituents, the existence of hydrogen bonds is also proved by the donor-acceptor forces. The study of the pH effect was done with modeling by different models (Langmuir, Freundlich, Langmuir-Freundlich, Redlich-Peterson), a kinetic treatment is also followed by the application of Lagergren, Weber, Macky.

Keywords : adsorption isotherms, adsorption kinetics, DSAC36-24, organic molecule

Conference Title : ICPCE 2017 : International Conference on Power and Control Engineering

Conference Location : Paris, France

Conference Dates : August 28-29, 2017