

How does phenol removal affect adsorbent activity?

This behavior expresses an antagonistic effect. As the amount of phenol molecules per site enhances, the accessible active site of the adsorbent for phenol removal decreases. Dependence of the density of receptor sites on temperature for MSAC and pristine activated carbon.

What is the adsorption capacity of phenol?

where C_0 and C_e are the initial and final concentration of phenol (mg L^{-1}) in solution, respectively, q_e is the adsorption capacity of phenol by the adsorbent ($\text{mg of phenol per g of AC}$), m is the mass of activated carbon (g) and V is the volume of phenol solution (L).

How does temperature affect adsorption of phenol onto pristine activated carbon?

As the temperature of the process increased, the adsorption of phenol onto pristine activated carbon decreased. As given in Table 1, positive ΔG values describe that adsorption is non-spontaneous under examined conditions.

Why are phenol adsorption capacities higher than pristine AC?

It is noted that all the adsorption capacities of phenol onto MSAC are higher than those of pristine AC due to the stronger interactions between phenol molecule and MSAC composite, especially the additional interaction provided by metal hydroxides.

Which physicochemical properties are responsible for phenol adsorption?

Moreover, the physicochemical properties of the developed adsorbent is supposed to be responsible for the transition of phenol adsorption. In fact, the molecules of phenol establish a multi-molecular interaction with the surface of adsorbent.

What are the mechanisms of phenol attraction?

There are various proposed mechanisms such as electrostatic attraction, π - π attraction between the phenolic ring and activated carbon basal planes, donor-acceptor complex formation, and hydrogen bonding between phenol molecules, and the presence of suitable functional groups on the adsorbent surface [21, 49].

In addition to their many well-known advantages (e.g., ultra-high porosity, good pore size distribution, easy functionalization, and structural tolerability), metal-organic ...

In this paper, we investigated the conversion mechanism of phenol gasification and hydrogen production in supercritical water using a combined approach of reactive force field (ReaxFF) and density functional ...

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and performance of KOH-activated carbons as well as their relationships are summarized and discussed through the ...

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Bentonite was modified with cetyltrimethylammonium bromide (CTAB). The organically modified bentonite (OMB) was used to remove phenol from aqueous solution, the microstructural changes were characterized by X ...

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