

A comparative thermodynamic study of lead ion adsorption in aqueous solution by ZIF-8 and ZIF-8-derived nanoporous carbon

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Abstract

Nanoporous carbons (NC) materials are synthesized by direct carbonization of zeolitic imidazolate framework (ZIF-8), a well-known metal-organic framework (MOF). In the same way, in this work it was synthesized the Zeolitic imidazolate framework (ZIF-8): a sub-category of the Metal-Organic-Framework (MOF's) [1-4].

In this study, we evaluate the efficiency of the obtained ZIF-8 as well as the derived particles by carbonization of it, nanoporous carbon (NP-ZIF-8) particles, as adsorbents for the removal of lead (Pb) ions from an aqueous solution.

The adsorption behavior is carefully studied from kinetic, equilibrium and thermodynamic point of view from which the obtained data can be described with different models. The efficiencies of ZIF-8 and NP-ZIF-8 for removing Pb ion are compared with other carbonaceous adsorbents literature published. The effect of solution pH and temperature on the removal percentage is also studied [2,3,4].

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