



## Evaluation of Jordanian treated natural zeolite for the uptake of p-nitrophenol from wastewater by continuous column method

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### ABSTRACT

In this study, removal of p-nitrophenol (PNP) onto Jordanian zeolite was investigated. The surface of the calcinated zeolite (CZ) was modified using urea (CZU) and thiourea (CZT). The experiments of the removal were carried out under different operating conditions in column reactor. A pseudo-second-order, intraparticle diffusion, and Elovich kinetic models were investigated to predict the rate constants and equilibrium capacities for this process. The results showed that the removal of PNP highly fitted the pseudo-second-order for the three adsorbents which provides the best correlation of the experimental data. The activation energies were calculated using the rate constants of the pseudo-second-order kinetic model, the  $E_a$  values for CZU, and CZT were found to be small, since the process is an exothermic one, which may be as physical and chemisorptions.

*Keywords:* p-Nitrophenol; Zeolite; Column; Kinetics

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