

عنوان مقاله:

Equilibrium and kinetic study for the adsorption of p-nitrophenol from wastewater using olive cake based activated carbon

محل انتشار:

فصلنامه جهانی علوم و مدیریت محیط زیست، دوره 2، شماره 1 (سال: 1394)

تعداد صفحات اصل مقاله: 8

نویسندگان:

N.T Abdel-Ghani - Chemistry Department, Faculty of Science, Cairo University, Giza, Egypt

E.S.A Rawash - Regional Center for Food and Feed, Agricultural Research Center, Giza, Egypt

خلاصه مقاله:

The present work was carried out to evaluate the removal of p-nitrophenol by adsorption onto olive cake based activated carbon having a BET surface area of 672 m²/g. The batch adsorption experimental results indicated that the equilibrium time for nitrophenol adsorption by olive cake-based activated carbon was 120min. The adsorption data was modeled by equilibrium and kinetic models. The pseudo- first and second order as well as the Elovichkinetic models were applied to fit the experimental data and the intraparticle diffusion model was assessed for describing the mechanism of adsorption. The data were found to be best fitted to the pseudo-second order model with a correlation coefficient (R²=0.986). The intraparticle diffusion mechanism also showed a good fit to the experimental data, showing two distinct linear parts assuming that more than one step could be involved in the adsorption of nitrophenol by the activated carbon. The equilibrium study was performed using three models including Langmuir, Freundlich and Temkin. The results revealed that the Temkin equilibrium model is the best model fitting the experimental data (R²=0.944). The results of the present study proved the efficiency of using olive cake based activated carbon as a novel adsorbent for the removal of nitrophenol from aqueous solution.

کلمات کلیدی:

(Activated carbon; Adsorption; Equilibrium; Intra-particle diffusion; Olive cake; p-nitrophenol (PNP)

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/589273>

