

Comparative Evaluation of Kinetic Model of Chromium and Lead Uptake from Aqueous Solution by Activated *Balanitesaegyptiaca* Seeds

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Abstract : A series of batch experiments were conducted in order to investigate the feasibility of *Balanitesaegyptiaca* seeds based activated carbon as compared with industrial activated carbon for the removal of chromium and lead ions from aqueous solution by the adsorption process within 30 to 150 minutes contact time. The activated samples were prepared using zinc chloride and tetraoxophosphate(VI) acid. The results obtained showed that the activated carbon of *Balanitesaegyptiaca* seeds studied had relatively high adsorption capacities for these heavy metal ions compared with industrial Activated Carbon. The percentage removal of Cr (VI) and lead (II) ions by the three activated carbon samples were 64%, 70% and 71%; 60%, 66% and 60% respectively. Adsorption equilibrium was established in 90 minutes for the heavy metal ions. The equilibrium data fitted the pseudo second order out of the pseudo first, pseudo second, Elovich, Natarajan and Khalaf models tested. The investigation also showed that the adsorbents can effectively remove metal ions from similar wastewater and aqueous media.

Keywords : activated carbon, pseudo second order, chromium, lead, Elovich model

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