

Removal of Heavy Metal Using Continous Mode

Authors : M. Abd elfattah, M. Ossman, Nahla A. Taha

Abstract : The present work explored the use of Egyptian rice straw, an agricultural waste that leads to global warming problem through brown cloud, as a potential feedstock for the preparation of activated carbon by physical and chemical activation. The results of this study showed that it is feasible to prepare activated carbons with relatively high surface areas and pore volumes from the Egyptian rice straw by direct chemical and physical activation. The produced activated carbon from the two methods (AC1 and AC2) could be used as potential adsorbent for the removal of Fe(III) from aqueous solution contains heavy metals and polluted water. The adsorption of Fe(III) was depended on the pH of the solution. The optimal Fe(III) removal efficiency occurs at pH 5. Based on the results, the optimum contact time is 60 minutes and adsorbent dosage is 3 g/L. The adsorption breakthrough curves obtained at different bed depths indicated increase of breakthrough time with increase in bed depths. A rise in inlet Fe(III) concentration reduces the throughput volume before the packed bed gets saturated. AC1 showed higher affinity for Fe(III) as compared to Raw rice husk.

Keywords : rice straw, activated carbon, Fe(III), fixed bed column, pyrolysis

Conference Title : ICCET 2015 : International Conference on Chemical Engineering and Technology

Conference Location : New York, United States

Conference Dates : June 04-05, 2015