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Abstract ABSTRACT

In this study we use the oligomers of amino ethylene series as matrix and introduce dithiocarbamate group to adsorb merely heavy metal ions. Because of its special structural characteristics , dithiocarbamate can combine with a great number of heavy metal ions to produce insoluble complex compound except for alkali metals and alkaline earth metals. We choose tetraethylene pentamine as raw material and prepare its dithiocarbamate as ion exchange resin,and discuss the feasibility of treating Pb,Zn,Ni.Co metal ions in waste water by the method of iqon exchange processing. Also,We change the synthesizing procedure and in various steps we blend in the surface structural modifiers (i.e. Glycerine,P.E.G. 400 , C.M.C.) .Then ,aiming to different surface structures of resin , we examine the adsorptive efficiency ,selectivity,regeneration efficacy and the effects of different pH ,adsorption time and temperatures,in order to acquire the optimum adsorptive conditions and the best effectiveness for recovery of heavy metals from industrial wastes or waste water.

According to these experiments ,among various synthesizing procedures, the procedure of adding CS2 firstly behaves the best adsorptive abilities ,i.e. 0.451 gm Pb2+/gm Resin, 0.121 gm Zn2+/ gm Resin, 0.149 gm Ni2+/ gm Resin ,0.12 gm Co2+/ gm Resin. By blending in any surface structural modifier, we can elevate the adsorptive ability of the resin and among these modifiers ,P.E.G. 400 get the best result. For different adsorptive temperatures, we obtain best result at lower temperature(i.e. 25℃). As for the adsorptive efficiency vs number of regenerations, it behaves a reversive relationship.For the study of adsorption time,there are 88~97% of the highest adsorption amounts for all these heavy metal ions after 10 min. By TGA analysis,we find two pyrolytic temperatures; first at 410~420 ℃ ,second at 640~680℃.
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