



Letter to the Editor

Modification of chitosan with carbamoyl benzoic acids for testing its coagulant-flocculant and binding capacities in removal of metallic ions typically contained in plating wastewater



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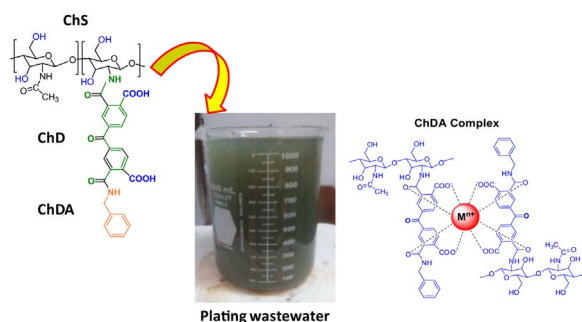
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GRAPHICAL ABSTRACT

Coagulant-flocculant agents



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ABSTRACT

This paper proposes the use chitosan modified with carbamoyl benzoic acids as new coagulant-flocculant agents for metals removal from aqueous solutions. The grafted chitosan species as chitosan dianhydride (ChD) and chitosan dianhydride-amine (ChDA) improved the removal of Cu^{2+} , Pb^{2+} , Ca^{2+} , Cr^{3+} , Zn^{2+} and Ni^{2+} , compared with chitosan alone. Zeta potential measurements predict doses and allowed to calculate binding constants between the new coagulant-flocculant agents and metallic cations (from 10^4 to 10^5 M^{-1}). After the coagulation-flocculation, solids were analyzed by SEM and EDS. SEM images show the texture of solids depending on the functional group grafted on chitosan. EDS study of solids containing chitosan dianhydride-metals (average of all scanner areas) revealed the wt% of metals: Cr (10.45%), Cu (5.95%), Ni (5.22%), Zn (4.36%), Pb (1.37%), Cd (0.31%) and Ca (0.10%) For recovered solids containing chitosan dianhydride-amine-metals, the observed wt% appeared in the same order: Cr (12.44%), Cu (6.75%), Ni (5.75%), Zn (5.12%), Pb (1.82%), Cd (0.59%) and Ca (0.12%).

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