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Synthesis, Characterization and Ion Exchange Property of New Cellulose Dihydroxybenzoic Acid (CDHBA) Resin

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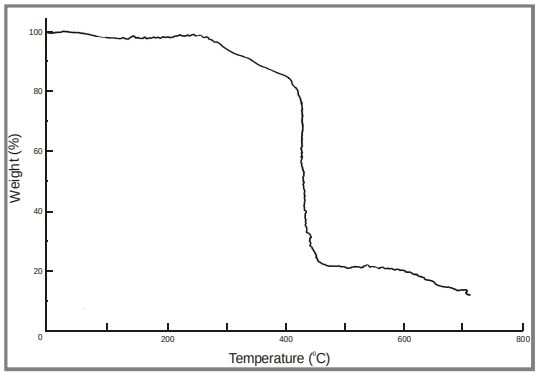
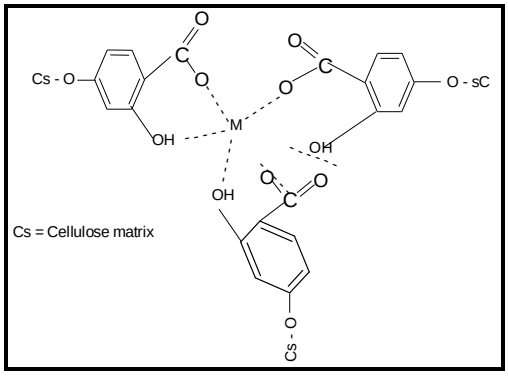
ABSTRACT

A new cellulose based resin containing dihydroxybenzoic acid groups has been synthesized and their adsorption behavior for heavy metal ions has been investigated using batch and column experiments. The dihydroxybenzoic acid group has been incorporated into cellulose by a modified Porath's method of functionalisation of polysaccharides. The cellulose dihydroxybenzoic acid (CDHBA) resin can selectively remove of heavy metal ions, which are contained in industrial wastewater. The CDHBA resin was characterized by FTIR, Thermogravimetric analysis. The effects of various adsorption conditions, such as pH, treatment time, agitation speed, temperature, flow rate and adsorbent dose were also investigated. The orders of distribution coefficient values were determined.

Graphical Abstract





Keywords: Cellulose dihydroxybenzoic acid (CDHBA) resin, Polysaccharides, Distribution coefficient, Thermogravimetric analysis, Industrial wastewater.