

Modification, characterization and application of mercerized lyocell fibers for Pb(II) removal from aqueous solution

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The current research describes the fabrication of anhydride functionalized lyocell fibers and their application for Pb(II) removal from aqueous solutions. Lyocell made up of regenerated cellulose fibers is available at low-cost, this precursor material was first mercerized using NaOH solution then modified using anhydride of diethylenetriamine pentaacetic acid. The physical and chemical properties of the as prepared fiber adsorbent was investigated by using FTIR and SEM analyses and FTIR results confirmed the successful grafting of anhydride. The sorption influencing factors such as pH and initial concentration on adsorption performance were studied in batch adsorption method. Effect of pH on sorption performance was studied in the range of 2–8 and found that pH 5 was optimum for sorption. The adsorption equilibrium data was modelled by using two Langmuir and Freundlich isotherm models, and found the Langmuir sorption isotherm model was better fitted.