

Title: Silver ion adsorption using alkali and organosilane modified coconut pith biosorbents

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Abstract: The coconut pith biosorbents were prepared by modifying coconut pith (CP) with sodium hydroxide and bis(triethoxysilylpropyl) tetrasulfide to enhance its sorption capacity and selectivity toward silver ion [Ag(I)]. It was found that the Ag(I) sorption capacity of pure CP, CP modified with sodium hydroxide, and CP modified with bis(triethoxysilylpropyl) tetrasulfide was 0.50, 0.48, and 0.62 mmol/g, respectively. The Ag(I) equilibrium data were best fitted to the Langmuir isotherm model, whereas the kinetic data obeyed the pseudo-second-order kinetic model with the anticipation of the film diffusion as the rate-limiting step. The sorption process was generally governed by a combination of physical and chemical sorption mechanisms. The Ag(I) sorption capacity and selectivity of coconut pith biosorbents were low as compared with other metal ions.