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ADSORPTION OF Cu^{2+} ON WHITE POPLAR AND OAK SAWDUST

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Abstract

The studies of Cu (II) adsorption were conducted by testing various sawdust types. Two biomass, oak sawdust wood (*Quercus robur*) and white poplar sawdust wood (*Populus alba*), have been compared considering their efficiency for copper removal from diluted water solutions. Raw sawdust proved no efficiency in adsorption. Therefore, pre-treatment processes were developed and optimized, to enhance the sawdust affinity for heavy metals adsorption. The optimized pre-treatment conditions are: solvent - aqueous solution of NaOH 3n at 22°C and a contact time 60 min for oak sawdust, respectively 30 min for poplar sawdust. The treated samples allow Cu(II) ions removal efficiency of 89% on oak sawdust and 67% on poplar sawdust. Metal ion sorption increased as the ratio of metal solution to the biomass quantity decreased. The increase of the metal ion concentration resulted in a steep increases in biosorption at lower concentrations, progressively reaching a plateau at higher metal concentrations, corresponding to multilayer mechanism.

Key words: biosorption, heavy metals removal, sawdust, wastewater treatment

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