J Adv Chem Eng 2018, Volume: 8
DOI: 10.4172/2090-4568-C4-015

Treatment of industrial effluents by using biopolymers from waste materials

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Biopolymers obtained from waste materials can be used as an adsorbent for removal of toxic metal ions and dyes from their aqueous solution. Such biopolymers like cellulose, hemicelluloses, lignin, pectin, and chitin show higher affinity for adsorption of metal ions as well as dyes. They can be used as biosorbent for treatment of industrial effluents containing toxic metal ions and dyes. The efficiency of such biosorbents can be increased by treatment with various chemicals. This research work mainly focuses on chemical modification of raw biosorbent using various reagents to introduce additional functional groups on its surface. Such chemical treatment removes water-soluble substances which decrease the water solubility of biosorbent. The surface functional groups are also exposed which are responsible for the adsorption of toxic metal ions. After the adsorptive removal, the metal ions can be recollected by the desorption process using a suitable reagent. It regenerates the biosorbent which can be reused. Finally, the exhausted biosorbent can be easily disposed of even by incineration. Hence the process becomes highly economic, efficient as well as environmental friendly.

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