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Sorption of Lead (II) Ions from Aqueous Solution by Acid Modified and Unmodified Papaya Seed

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ABSTRACT

The removal of Pb (II) ion from aqueous solutions onto chemically modified papaya seed was studied at varying initial metal ion concentrations, adsorbent doses, pH and contact time. Batch experiments were carried out to evaluate the adsorption capacity of the papaya seed chemically modified with citric acid. The residual Pb (II) ion concentrations after biosorption were analyzed by UV- Visible and FTIR spectroscopy. The characterization of the papaya seed biomass suggested the possible contribution of carboxyl and hydroxyl groups in Pb(II) biosorption. The biosorption efficiency of the papaya seed was examined under various factors like pH, contact time and adsorbent dose. The adsorption data was verified using Langmuir and Freundlich isotherm model. The present study revealed that citric acid modified papaya seed could be used as an efficient sorbent for the removal of Pb(II) ion from aqueous solutions.

Keywords: Adsorption isotherms, Pb (II) ions, papaya seed, biosorption.