

Use of *Carica papaya* as a Bio-Sorbent for Removal of Heavy Metals in Wastewater

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Abstract : The study was aimed at assessing the effectiveness of reducing the concentrations of heavy metals in waste water using Pawpaw (*Carica papaya*) wood as a bio-sorbent. The heavy metals considered include; zinc, cadmium, lead, copper, iron, selenium, nickel, and manganese. The physiochemical properties of carica papaya stem were studied. The experimental sample was obtained from a felled trunk of matured pawpaw tree. Waste water for experimental use was prepared by dissolving soil samples collected from a dump site at Owerri, Imo state in water. The concentration of each metal remaining in solution as residual metal after bio-sorption was determined using Atomic absorption Spectrometer. The effects of pH, contact time and initial heavy metal concentration were studied in a batch reactor. The results of Spectrometer test showed that there were different functional groups detected in the carica papaya stem biomass. Optimum bio-sorption occurred at pH 5.9 with 5g/100ml solution of bio-sorbent. The results of the study showed that the treated wastewater is fit for irrigation purpose based on Canada wastewater quality guideline for the protection of Agricultural standard. This approach thus provides a cost effective and environmentally friendly option for treating waste water.

Keywords : biomass, bio-sorption, *Carica papaya*, heavy metal, wastewater

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