**Abstract**

Heavy metal remediation of aqueous streams is of special concern due to recalcitrant and persistency in the environment. In this study, Cadmium pollution is dealt with due to its well-known toxicity and extensive use in industries such as storage – battery manufacture, photographic materials. Biosorption is emerging as a potential alternative to the already existing conventional technologies for the metal recovery from aqueous solutions. Agricultural waste material being highly efficient, economically viable and renewable source is exploited for metal remediation. The sorption efficiency of the acid treated *Tamarindusindica*hull(TTIH) has been investigated in the removal of Cd(II) from aqueous solutions. Batch equilibration experiments are carried out under varied operating factors viz., effects of particle sizes, dosages, agitation time intervals, initial concentrations and pH of the medium. The chosen material exhibited 85% removal at optimized conditions of 0.18 mm particle size, 300 mg dosage, 15 min, 100 mg/L Cd(II) ion concentration and pH 7. Isothermal models viz., Langmuir and Freundlich models are verified where the best linear fit is registered for Langmuir plot favouring monolayer adsorption. The observed results indicate that TTH is a promising sorbent in chelating Cd(II) ions and their applicability at industrial scale is prominent.