

Biocarbon of *Tamarindus indica* : An efficient biosorbent for Pb(II)

Amit B. Patel¹ and Premlata Kumari^{1*}

¹S.V. National Institute of Technology, Applied Chemistry Department, Surat-395007, Gujarat, INDIA

Abstract. The effective removal of heavy metals from industrial wastewater is among the most important issue as the presence of heavy metals in the environment has adverse effect. Adsorption processes employed in the most of the available technologies for the removal of metal contaminants from aqueous systems. There is a need to develop new adsorbents which are readily available at low cost to remove metal contaminants in aqueous system. In this study, The presence of lead in drinking water above the permissible limit (5 ng/ml) may cause adverse health effects such as anaemia, encephalopathy, hepatitis, and nephritic syndrome. Biocarbon produced from Tamarind (*Tamarindus indica*) leaves was applied to remove of lead (II). Various kinetic models were tested for conformity to the experimental data obtained. The Langmuir and Freundlich adsorption models were also used to test the data. Batch sorption experiments were performed as a function of pH, contact time, solute concentration and adsorbent dose. The optimum pH required for maximum adsorption was found to be 4.0. The maximum contact time for the equilibrium condition is 2 hour at the biocarbon dose rate of 0.1g/20ml. The maximum efficiency of lead removal via biocarbon was found to be >98%.

Keywords: biocarbon, biosorbent, lead(II), *Tamarindus indica*.