A
Project Report
On

"REMOVAL OF NI (II) IONS FROM AQUEOUS SOLUTION USING AGRICULTURAL WASTE: ADSORPTION ON A FIXED-BED COLUMN"

Submitted By:

SANDEEP PARMA	**(3RB05CH023)**
JAGADEVI KALSHETTY	**(3RB05CH008)**
M. RAVI KIRAN	**(3RB05CH011)**
AMOL MALEWADE	**(3RB05CH002)**

Under the guidance of:

Prof. B. S. PATIL
(H.O.D. Dept. of Chemical Engg)

Department of Chemical Engineering

Rural Engineering College, Bhalki-585328

Dist: Bidar, Karnataka

Visveswaraiah Technological University, Belgaum

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Abstract

The removal efficiency of waste tea from nickel containing aqueous solutions was investigated. All experiments were conducted fixed-bed columns. Experiments were carried out as a function of liquid flow rate (5–20 mL/min), initial Ni(II) concentration (50–200 mg/L), bed height (10–30 cm), pH of feed solution (2.0–6.0) and particle size (0.15–0.25 to 1.0–3.0 mm) of adsorbent. The total adsorbed quantities, equilibrium uptakes and total removal percents of Ni (II) related to the effluent volumes were determined by evaluating the breakthrough curves obtained at different flow rates, different inlet Ni (II) concentrations, different pH value, different bed height and different particle size for agricultural waste. The longest breakthrough time and maximum of Ni (II) adsorption is obtained at pH 4.0. The results shows that the column performed well at lowest flow rate. Also, column bed capacity and exhaustion time increased with increasing bed height. The bed depth service time (BDST) model were used to analyze the experimental data and the model parameters were evaluated. Good agreement of the experimental breakthrough curves with the model predictions was observed.