

ABSTRACT: This research investigated the batch-mode adsorption of cadmium (II) and lead (II) ions utilizing a cost-effective biosorbent derived from dried rose petals, which are readily available in the environment. Adsorption has environmental advantages, such as the elimination of heavy metals. The studies were conducted through atomic absorption spectrophotometer, with several parameters manipulated, including pH levels, biosorbent quantity, contact duration, beginning metal concentration, and temperature regulation, Point of zero charge and FTIR Spectrophotometer. The experimental findings indicate that there is a positive correlation between the quantity of biosorbent employed and the reduction in particle size, and the subsequent increase in the percentage of biosorption. The greatest biosorption of cadmium (II) and lead (II) ions was seen at pH 5.9 and 3.7, respectively, with corresponding adsorption capability of 13.86 mg per g and 30.1 mg per g. The adsorbent dose of 4.0g resulted in a removal efficiency of 37.71% for Cadmium ions and 76.82% for Lead ions. The Fourier Transform Infrared (FTIR) results show that the existences of carboxylic groups is accountable for the connecting of metals. For the removal of metals from effluent, it has been discovered that dried rose petals are a highly effective natural biosorbent substitute.

KEYWORDS: adsorption; lead; cadmium; rose; petals