P R E F A C E

The work presented in this thesis deals with a systematic investigation on the sorption and desorption behaviour of a bipyridylium herbicide, paraquat (1, 1'-dimethyl-4,4'-dipyridylium dichloride) by ion-exchangers. For this purpose, three natural clay minerals such as bentonite, vermiculite, chlorite and four synthetic exchangers viz. Laponite (a hectorite), Amberlite IR-120, Amberlite IRC-50 and Linde molecular sieve - 13X have been selected as adsorbents.

Considerable attention has been devoted to the studies on the desorption behaviour of paraquat from the respective exchangers in order to understand the physico-chemical aspects of exchange equilibrium. Monovalent and bivalent inorganic ions as well as tetraalkyl ammonium, alkane diammonium and long chain surface active ions of varying size and shape, have been used as desorbing ions. The exchange data give an idea of the relative strength of binding of the herbicide with the adsorbents vis-a-vis the extent of extractibility, steric effect and ion-sieve action imposed by the structure of the adsorbent.

Attempt has been made to interpret the idea of both sorption and desorption in the light of prevalent approaches and

models and also to express the data in qualitative and quantitative terms.

The research work was carried out by the author at the Department of Chemistry, University of North Bengal, India.