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STABILITY CONSTANT AND CHEMICAL FORMULA OF COMPLEXES THROUGH POLAROGRAPHIC TECHNIQUES

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ABSTRACT

The stability constants of the complexes of Nickel(II), Zinc(II) and Lead(II) with various ligands i.e ammonia, methylamine, dimethyl-amine, diethylamine, diethanolamine, and benzylamine were determined through polarographic techniques by using Donald. D.Ford and David N. Hume equation. The influence on the stability of complexes of the structure of chelating agents was also studied. Altogether, stability constants of fourteen complexes were determined and are reported.

INTRODUCTION

In continuation of our previous paper[2] the stability constant of the above mentioned complexes is reported. The formation and dissociation of complexes allows the prediction of optimum experimental conditions in methods of analysis based on complexation[1]. The method is based on the fact that the characteristic half wave potentials of the metal ion, in presence of of particular electrolyte is shifted when the metal ion undergoes complex formation[3,4]. From this shift of half wave potential, the elucidation of stability constant can be carried out with the help of Deford and Hume equation. The present paper deals with the determination of half wave potentials of various metal ions as a function of the ligand concentration which are used to measure the stability constants of the complexes formed.

EXPERIMENTAL

Measurement were made with the Redelkis recording polarograph model OH-102. Special type of vessel with soldered electrodes and inlet pipes type OH-109, were used. The resistance of the cell did not change noticeably as composition of metal ligand mixture varied. The removal of oxygen was carried out by purging N_2 (passed through red hot filament of copper) for 15-20 minutes.

Materials: Reagent grade metal salts were used without further purification. The solutions were made by measuring accurate volume weight of the ligand. The