

PREFACE

A systematic approach to the use of organic reagents in inorganic analysis originated during the earlier part of this century. Within a short period organic compounds have found a great diversity of uses in the analysis of inorganic species. However, all the books and huge volumes of works reported have been concerned with the conditions and experimental techniques of individual estimations and separations. Thus, chemical methods of analysis have been based on the practical application of properties found accidentally or at the most on some empirical hypotheses. Recently, however, a different approach has been noticed and books and reviews probing into the basic principles of the reactions as well as into the characteristic properties developed into analytical procedures are coming out in good numbers. With this new approach one can foresee how an organic molecule can be 'tailored' to serve the purpose of analysing inorganic species utilising a desired procedure like gravimetry, spectrophotometry, extraction etc. Also, given a reagent one can reasonably predict for which inorganic species it is likely to find analytical applications.

This report is the result of the investigations carried out with this background. The uses of three different members of β -ketoanilides, viz., benzoylacetanilide, benzoyl-m-nitroacetanilide and cyclopentanone-2-carboxyanilide in the analysis of three typical metals viz., beryllium (electronic configuration, $1s^2, 2s^2$) mercury (electronic configuration, $[\text{Xe}]4f^{14}5d^{10}6s^2$ and uranium (electronic configuration, $[\text{Rn}]5f^3 6d^1 7s^2$) utilising the fundamental procedures of gravimetry, spectrophotometry, extraction

and control of concentration of different species (masking of reactions and production of reactants homogeneously) have been investigated. The experimental details have been described in Chapters 5 through 7 and a summary has been given in Chapter 8. A short synopsis in a tabular form has also been presented on page 44. The results of the investigations have been communicated to different Indian and International journals. Some of them are already published and the most of the remaining are due to be published within a month or two.