ANALYTICAL CHEMISTRY OF NIOBIUM AND TANTALUM
AND
ALUMINIUM AND BERYLLIUM

Thesis
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by
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R. R. Nair, M.D., F.I.C.,
Signature
The thesis consists of two parts viz:—(i) analytical chemistry of niobium and tantalum and (ii) analytical chemistry of aluminium and beryllium. The investigations are confined to the use of organic reagents in the analytical chemistry of these two pairs of metals which are closely associated in chemical analysis.

The organic reagents employed in the investigations on the analytical chemistry of niobium and tantalum are: (i) four o-phenolic oximes viz:—salicylaldehyde, resacetophenone oxime, pyridol oxime and \(\beta\)-hydroxy-1-naphthaldehyde; (ii) eight \(\alpha\)-hydroxy chalcones viz:—2'-hydroxy chalcone, 2',2'-dihydroxy chalcone, 2',4'-dihydroxy chalcone, 2',4'-dihydroxy chalcone, 2',4'-dihydroxy chalcone, 2',4'-dihydroxy-3-ethoxy chalcone and 2',3',4'-tri-hydroxy chalcone; (iii) three \(\alpha\)-hydroxy ketones viz:—\(\alpha\)-hydroxy acetophenone, resacetophenone and gallacetophenone and (iv) thirty one azo dyes containing one or more hydroxyls ortho to the azo group and azo dyes containing an \(\alpha\)-hydroxy carbonyl group.

The organic reagents employed in the investigations on the analytical chemistry of aluminium and beryllium are: (i) eight \(\alpha\)-hydroxy chalcones (listed above) and (ii) eighteen azo dyes containing one or two hydroxyls.
ortho to the azo group and azo dyes containing an o-hydroxy carbonyl group.

The objectives of these investigations are discussed in the appropriate places.
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PART ONE

ANALYTICAL CHEMISTRY OF NIOBIUM AND TANTALUM
CHAPTER

I. Introduction

II. Qualitative Tests

III. Gravimetric Methods

IV. Colorimetric Methods