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ESTIMATION OF FLUORIDE BY QUENCHING
THE FORMATION OF THE
TITANIUM SALICYLATE PYRIDINE ADDUCT
IN CHLOROFORM

A DISSERTATION

submitted in partial fulfilment of the requirements
for the Degree of the Master of Science of the
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INTRODUCTION :

Analytical procedures for the estimation of fluoride are important in studies of pollution, beneficiation of fluorapatite mineral, distribution in aquatic environment, fluoride content in tea etc. that the fluoride content in drinking water should not exceed 1 ppm levels makes studies for and accurate estimation of fluoride significant.

A survey of methods for determination of fluoride lists the earliest method due to Berzelius who applied it to silicate rock analysis. It involved decomposition of silicate rock by fusion with alkali carbonates, removal of silica and aluminium by precipitation with ammonium and zinc carbonates, separation of phosphate and chromate by precipitation with silver nitrate solution, and finally precipitation of fluoride as calcium fluoride from an acetate solution. It was possible to recover silica from the ammonium and zinc carbonate precipitates. It proved to be the only method then available for determination of silica in minerals containing fluoride. The limit of detection was reported as (0 - 0.5)⁽²⁾ percent fluorine (0-5000)ppm.

Other gravimetric procedures included the use of triphenyl-tine chloride⁽³⁾ as the precipitating reagent to estimate (0.1 - 50) mg. fluoride in 20-100 cm³ solution at pH 4-9.

Gravimetric and titrimetric procedures (Volhard's titration) based upon the precipitation of lead chlorofluoride⁴ found use in the analysis of samples containing appreciable quantities of fluoride in the range of 1- 20 percent fluoride (10^4 - 20×10^4) ppm. The method showed interferences from aluminium, iron, phosphate, sulphate, chromate, arsenate and silica.