

论文

铋、铝、钙、镁混合盐类的乙二胺四乙酸二钠盐电流滴定法

翁元凯;李惠珍

南京药学院分析化学教研组

摘要:

关键词:

AN AMPEROMETRIC TITRATION METHOD FOR THE ANALYSIS OF MIXTURES OF BISMUTH,ALUMINIUM,CALCIUM AND MAGNESIUM SALTS

OONG YUEN-KAI LEE HWEI-CHEN

Abstract:

An amperometric titration method for the analysis of mixtures of bismuth,alumiium,calcium and magnesium salts was studied and a procedure was proposed below. Stock solutions were prepared by dissolving samples of bismuth metal(C.P.),aluminium metal(C.P.),magnesium metal(C.P.) and calcium carbonate(C.P.)each equivalent to 0.005M separately in the minimum amount of nitric acid and then diluted with water accurately to 100 ml. For determination,an exact amount of each of the stock solutions was pipetted into a 125 ml 3-necked flask(flat bottomed)and titrated amperometrically according to the following four steps. 1. Determination of bismuth:The sample solution was adjusted to pH 1.5 to 2 with solid chloroacetic acid. Add 0.5 ml of 0.5% gelatin solution and sufficient quantities of water to make the total volume about 100 ml.After bubbling in hydrogen for 15 minutes,the solution was titrated with 0.1M EDTA.Current measurements were made at -0.25 v vs S.C.E. 2. Determination of the total amount of aluminium,calcium and magnesium: After the bismuth end point,the reaction mixture was treated with an excess amount of 0.1M EDTA.Heat to nearly boiling to hasten the reaction between aluminium ions and EDTA.The excess EDTA was back titrated with 0.05M calcium nitrate solution after the mixture was adjusted to pH 8 with 6N ammonia.The current was measured at +0.05v vs S.C.E. 3. Determination of the total amount of calcium and magnesium:To another fresh portion of the stock solution,10g of triethanolamine was added to mask aluminium and bismuth ions.1 ml of 0.5% gelatin solution and 90ml water were added and the pH was adjusted to 10 with 6N nitric acid. The end point was then determined by measuring the increase in concentration of excess EDTA as indicated by current measurements at +0.02v vs S.C.E. 4. Determination of calcium:The titration of calcium was carried out according to the method proposed by Laitinen and Sympson using zinc ion as the indicator except that the bismuth ion present was removed previously with hydrogen sulfide and the applied potential was maintained at -16v vs S.C.E.

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