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An Attempt to Determine Beryllium in the Presence of Aluminum Conductometrically (Abstract)

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AN ATTEMPT TO DETERMINE BERYLLIUM IN THE
PRESENCE OF ALUMINUM CONDUCTOMETRICALLY

(ABSTRACT)

ROBERT TORLEY AND LOUIS WALDBAUER

A study was made of the possibility of a stable, soluble complex of beryllium serving as a means of its conductometric titration in the presence of aluminum.

It was found that beryllium formed soluble, slightly dissociated compounds with both the oxalate and the malonate ions, the mole ratio of the beryllium to oxalate and to malonate being in each case 1:1. Complexes were formed with the tartrate and the hexametaphosphate ions. Only in the case of the formation of the beryllium oxalate compound was the break in the conductivity curve sharp enough for quantitative measurements. Aluminum was not found to form either a slightly dissociated compound or a complex ion with the oxalate ion. The pH of a 0.10 N solution of ammonium oxalate was found to be the most satisfactory for the titration.

Titrations of aqueous solutions of beryllium chloride containing in the neighborhood of 0.4 mg. of beryllium had a precision of 10% and less than 5% for quantities from 0.9 to 1.2 mg. As the concentration was increased beyond 1.2 mg. the range of imprecision became too large for quantitative determinations. High concentrations of other electrolytes interfere. Aluminum, although forming no oxalate complex, interferes due to the increased conductivity of the solution.

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