

Experimental

Resin. The cation resin (Dowex 50 X-12 colloidal) and the anion resin (Dowex 1 X-8) were washed alternately with ammonium hydroxide and hydrochloric acid several times. The fractions which had a settling rate from aqueous suspension of 0.50-0.75 cm./min. were used in these experiments.

Eluting Agent. A solution of 20% ethyl alcohol saturated with hydrogen chloride gas (12.5 M hydrochloric acid STP) was the eluting agent in these studies.

Operations. The columns were packed with the H^+ form of the resin so that the resin bed dimensions were normally 5 cm. length and 3 mm. diameter. After the resin had been washed with the eluting agent, the excess eluting agent was removed, and the tracer activities to be separated were transferred to the top of the resin column in one drop of eluting agent, which was allowed to flow into the resin. The operation was repeated with a second drop; then, to minimize the trailing edge of the activity peaks, the space above the resin bed was rinsed with several drops of the alcoholic hydrochloric acid solution. A sufficient amount of eluting agent was transferred to the column and pressure applied to obtain the desired flow rate.

To find optimum conditions for the actinide-lanthanide group separation, investigations of the effect of varying (a) alcohol and hydrochloric acid concentrations, and (b) flow rate, were made. A flow rate of one minute per drop, using 20% alcohol saturated with