

3. Dowex 50 Resin - Concentrated Hydrochloric Acid Eluant. Group separations of lanthanides from the transplutonium elements have been commonly made by elution of the mixtures from Dowex 50 columns with 13 M hydrochloric acid.¹² The method has been improved recently by utilizing 20% ethyl alcohol saturated with hydrochloric acid as the eluting agent (first used by Street¹³) and also by using Dowex 50 colloidal 12% cross linked resin. The use of alcohol in the eluting agent has the effect of delaying elution both of actinides and of lanthanides, but with a greater effect upon the latter, and with resultant improved group separations. Use of the colloidal resin, as compared with spherical resin, gave sharper elution peaks, especially at more rapid flow rates. The improved method can also be used to make separations of some individual actinides, and is another means for comparison of elements 99 and 100 with their predecessors, as shown in Fig. 6a. The individual peaks in Fig. 6a have been adjusted by division with an appropriate number to give approximately equal peak heights. Americium was not present in the experiment shown in this figure but its elution position was calculated from data obtained in previous experiments. It is interesting to note that the elution positions are in order of atomic number except for the reversal of americium in preceding curium, which has been observed in several separate experiments in which americium and curium were both present.