

## Zirconium selenite as ion-exchanger

According to the literature<sup>1</sup> some zirconium salts have good ion-exchange properties. Since  $\text{ZrO}_2$  is precipitated by  $\text{H}_2\text{SeO}_3$  to give sparingly soluble compounds, zirconium selenite was prepared from 2 M nitric acid solutions of  $\text{H}_2\text{SeO}_3$  and  $\text{ZrOCl}_2 \cdot 8\text{H}_2\text{O}$  (ratio  $\text{H}_2\text{SeO}_3:\text{ZrOCl}_2$  1:1.23). The precipitate was washed with water until the pH was 4 and then dried at room temperature.

The capacity was determined by running a 0.1 M solution of NaCl through a column and titrating the acid formed. The capacity was found to be 0.48 mequiv./g.

The behaviour of the IB-group was studied with zirconium selenite as exchanger, in the same way as previously with zirconium phosphate<sup>2</sup>.

Paper impregnated with zirconium selenite was prepared as follows:

(1) Solution A: 12.3 g of  $\text{ZrOCl}_2$  in 150 ml of 2 M  $\text{HNO}_3$ . Whatman No. 1 paper was impregnated with this solution, the excess drained off and the paper dried at room temperature.

(2) Solution B: 10 g of  $\text{H}_2\text{SeO}_3$  in 150 ml of 2 M  $\text{HNO}_3$ . The paper impregnated with solution A was immersed in solution B. The paper was then washed with water until the pH was 4 and dried at room temperature.

With this impregnated paper the separation of Ag(I) and Cu(II), and of Cu(II) and Au(III) was studied.

(a) With 0.01 M HCl as eluent a good separation of Cu(II) ( $R_F = 0.25$ ) and Au(III) ( $R_F = 0.66$ ) was obtained. The salts employed were  $\text{CuCl}_2$  and  $\text{AuCl}_3$ .

(b) With 0.1 M HCl as eluent, Ag(I) was precipitated ( $R_F = 0$ ), while Cu(II) had an  $R_F$  of 0.78. The salts employed were  $\text{Ag}_2\text{SO}_4$  and  $\text{CuSO}_4$ .

The results were similar to those obtained with zirconium phosphate<sup>2</sup>.

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<sup>1</sup> P. PASCAL, *Nouveau Traité de Chimie Minérale*, Tome 5e, Masson et Cie., p. 726.

<sup>2</sup> M. J. NUNES DA COSTA AND M. A. S. JERÓNIMO, *J. Chromatog.*, 5 (1961) 456.

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## Improved separation of amino acids with a new solvent system for two-dimensional paper chromatography

Some of the major advantages of the paper chromatographic method are its versatility of application to separate any complex group of substances, flexibility of the choice of the moving phase, and the ease and capacity with which information can be obtained. The vast amount of available literature on these subjects has been excellently