

Knoevenagel type are instances of positive ion catalysis. The details of this investigation will shortly be submitted to THIS JOURNAL.

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THE SEPARATION OF COLUMBIUM AND TANTALUM

Sir:

When columbium is reduced in acid solution from a valence of five to a valence of three the solution becomes blue. In the course of a study of the electrolytic reduction of columbium, with a view to the separation of this element from tantalum, reduction in alkaline solution was attempted. Although no color change was obtained, the formation of an amalgam at the mercury cathode was noted. This suggested the possibility of obtaining metallic columbium in the form of an amalgam by reduction in alkaline solution. Shortly thereafter the writer's attention was called to the article of Fink and Jones,¹ where they show that tungsten can be plated from a saturated solution of sodium carbonate at elevated temperature and high current density. Since that time, the writer has found that, at a current density of approximately 3 amp./sq. dm. and a temperature of 103°, columbium may be plated from a saturated solution of sodium carbonate containing ignited columbium oxide (Cb_2O_5). A copper cathode was used. Tantalum will not plate out from a similar bath under identical conditions of temperature and current density. Further, it has been found that a metallic plate is obtained from a carbonate bath containing a mixture of the ignited oxides of columbium and tantalum using the same temperature and current density as that indicated above. It seems to be a fairly safe conclusion that only columbium may be plated from a saturated solution of sodium carbonate containing a mixture of the ignited oxides of tantalum and columbium.

At present further studies are being made concerning the nature of the plates obtained by this method.

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¹ C. G. Fink and F. L. Jones, *Trans. Am. Electrochem. Soc.*, Preprint 59-27, 273 (1931).