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Methorics of the Precipitation Processes. XVI.
A Study of the Precipitation of Sparingly Soluble Metal Iodates*

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The precipitation phenomenology of silver, lead, and lanthanum iodates in aqueous electrolytic solutions and the concentration regions of their separation as solid phase were investigated. Only in the case of silver iodate the limiting concentrations for precipitation were concordant to the solubility concentrations of some other authors. It seems that in solutions with great excess of metal ions complex ionic species of the type $[Me_nIO_3]^{n-1}$ are formed. In all three cases there exist differences between the limiting concentrations for the precipitation and the ionic solubility values. The precipitation curves of metal iodates show only one maximum which extends from the complex solubility limit at high metal concentrations to the another boundary at low concentrations.

It seems that the precipitation of slightly soluble metal iodates in aqueous electrolytic solutions has hardly been investigated. Except for some publications dealing with the solubility determinations in water and aqueous solutions, we can mention only a paper of Willard and Yu¹. These authors investigated the precipitation of cerium iodate from homogeneous solutions in order to develop a method for the quantitative separation of cerium from other rare earth elements.

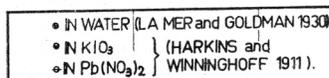
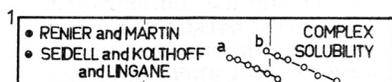
This work has been undertaken in order to obtain some insight into the precipitation phenomenology of metal iodates and to determine the concentration region of their separation as a solid phase from electrolytic solutions. The iodates of silver, lead and lanthanum were investigated.

The investigation was conducted along two lines: 1. The determination of

these solutions the various dilutions of both components were made in test tubes, always keeping in one series of experiments the concentration of one component as constant, while the concentrations of the other component was varied within the appropriate range. The solutions were mixed directly in the test tubes, and the content of the test tubes was examined for the presence or the absence of a Tyndall beam by means of a Reichert microscope lamp during a period of two days. The limiting concentrations for the precipitation of $\text{La}(\text{IO}_3)_3$ did not change after 150 minutes. But for the lead and silver iodates changes were noted during a period of one (lead iodate) or two (silver iodate) days.

The precipitation curves of the metal iodates were obtained in the same manner as was described previously for the silver halides². A Pulfrich photometer and a Zeiss tyndallometer were used for the measurement of the light of wave length 530 m μ scattered at an angle of 45°.

All measurements were performed at 20°C.



lanthanum iodates from the literature³⁻⁹ are also included in the diagrams in order to compare our limiting concentrations for the precipitation with solubility concentrations.

As regards the other aspects of our general precipitation diagram for

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Istraživali smo precipitaciju srebrnog, olovnog i lantanovog jodata u vodenim otopinama elektrolita. Odredili smo granične koncentracije za precipitaciju. Samo u slučaju srebrnog jodata podudarene su te koncentracije s literaturnim podacima.