

The Chemistry of Protactinium : XI. A Study of the Solvent Extraction of Protactinium(IV) Reduced with Europium(II) from a Perchloric Acid Solution, Using Thenoyltrifluoroacetone as the Extractant(Chemistry)

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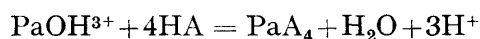
of the previous investigators. On the basis of the above facts, the influence of Cr(II) on the extraction of Pa(IV) was studied by using such extractants as BPHA, TAA, and TOA. In every case, the distribution ratio of Pa(IV) decreased with an increase in the concentration of Cr(II) in the aqueous phase. One of the most reliable explanations for the phenomena is the possibility that a multi-nuclear complex between Pa(IV) and Cr(II) or Cr(III) is formed. However, the effect of Cr(II) on the absorption spectra of Pa(IV) could not be found, and many more experiments will be necessary to explain the effect of Cr(II) on the extraction behavior of Pa(IV).

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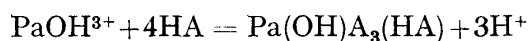
Isamu KAWASUJI, Akiko SATO and Shin SUZUKI

Bull. Chem. Soc. Japan, **47** (1974), 2213.

Europium(II) was found to be an excellent reductant for reducing protactinium in microquantities to the tetravalent state. The behavior of Pa(IV) in the perchloric acid solution was investigated by the TTA-benzene extraction method. It was found that the PaOH^{3+} ion existed predominantly in a 0.03–3M perchloric acid solution at the ionic strength of 3. The reaction of TTA extraction may proceed as:



or



The distribution ratio of Pa(IV) in the system using Eu(II) as the reductant is about ten times as large as that in the system using Cr(II) as the reductant. It was considered that a non-extractable complex may be formed between Pa(IV) and Cr(III), while such a complex may not be formed when Eu(II) is used as the reductant.

A Study of Quenching of Triplets by Ferrocene

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Bull. Chem. Soc. Japan, **47** (1974), 1331

Rate constants for quenching of several triplets by ferrocene have been determined in ethanol. Most triplets have been found to be deactivated by ferrocene, yielding no observable transient absorption. The rate constant increases with increasing triplet energy in the range 8000–17000 cm^{-1} . The quenching mechanism has been discussed, the lowest triplet level of ferrocene being estimated to be $15000 \pm 1000 \text{ cm}^{-1}$.