

Solvent-Extraction Behavior of Carrier-Free Rhodium

Tomitaro ISHIMORI, Yoshii KOBAYASHI and Yoshie USUBA

Japan Atomic Energy Research Institute, Tokai, Ibaraki

(Received November 21, 1967)

Distribution of carrier-free rhodium in the 21 extraction system given in Table 1 was studied with aids of Rh-105.

Distribution ratio, K_d , was obtained in a similar manner to that previously reported.¹⁾ Namely, 2 ml each of the pre-equilibrated organic and aqueous phases were shaken in a 5 ml glass-stoppered cylinder for 2 min. After the separation of the two phases, aliquots of each phase were taken into two glass tubes respectively for radioassay. The K_d value was determined as the total activity of the organic phase divided by that of the aqueous phase. All procedures were carried out at the room temperature.

The 35.5 h^{-105} Rh tracer was prepared in a hydro-

chloric acid solution according to Kobayashi's procedure.²⁾ The solution was evaporated to dryness, then the tracer was taken up into hydrochloric, nitric or sulfuric acid solution and used without any further treatment.

Results obtained are summarized in Fig. 1, where K_d values in logarithmic scale are shown as the function of the acidity of the aqueous phase for the respective extraction system. In Fig. 1, average values of several measurements are represented by dots with their standard deviations, while values obtained by a single measurement as only dots. Figures given here can be compared with those for many other elements of the corresponding systems in the previous works of the present authors.³⁾

1) T. Ishimori, K. Watanabe and E. Nakamura, *This Bulletin*, **33**, 637 (1960); K. Kimura, *ibid.*, **33**, 1038 (1960).

2) Y. Kobayashi, *J. Inorg. Nucl. Chem.*, **29**, 1374 (1967).

3) T. Ishimori *et al.*, JAERI Report 1047 (1963); 1062 (1964); 1106 (1966).

TABLE 1. EXTRACTION SYSTEMS STUDIED

Organic phase	Aqueous phase
100% TBP (Tri-butyl phosphate)	HCl or HNO ₃
50, 25 or 10% TBP in toluene	HCl or HNO ₃
25% TBP in CCl ₄	HNO ₃
10% TIOA (Tri-isooctyl amine) in xylene	H ₂ SO ₄
5% TIOA in xylene	H ₂ SO ₄ , HCl or HNO ₃
0.1% TIOA in xylene	H ₂ SO ₄
100% Isopropyl ether	HCl
10% Amberlite LA-1 in xylene	HCl or HNO ₃
5% TOPO (Tri-octyl phosphine oxide) in xylene	HCl or HNO ₃
10% Primene JM-T in xylene	HCl
DIPK (Di-isopropyl ketone)	HCl

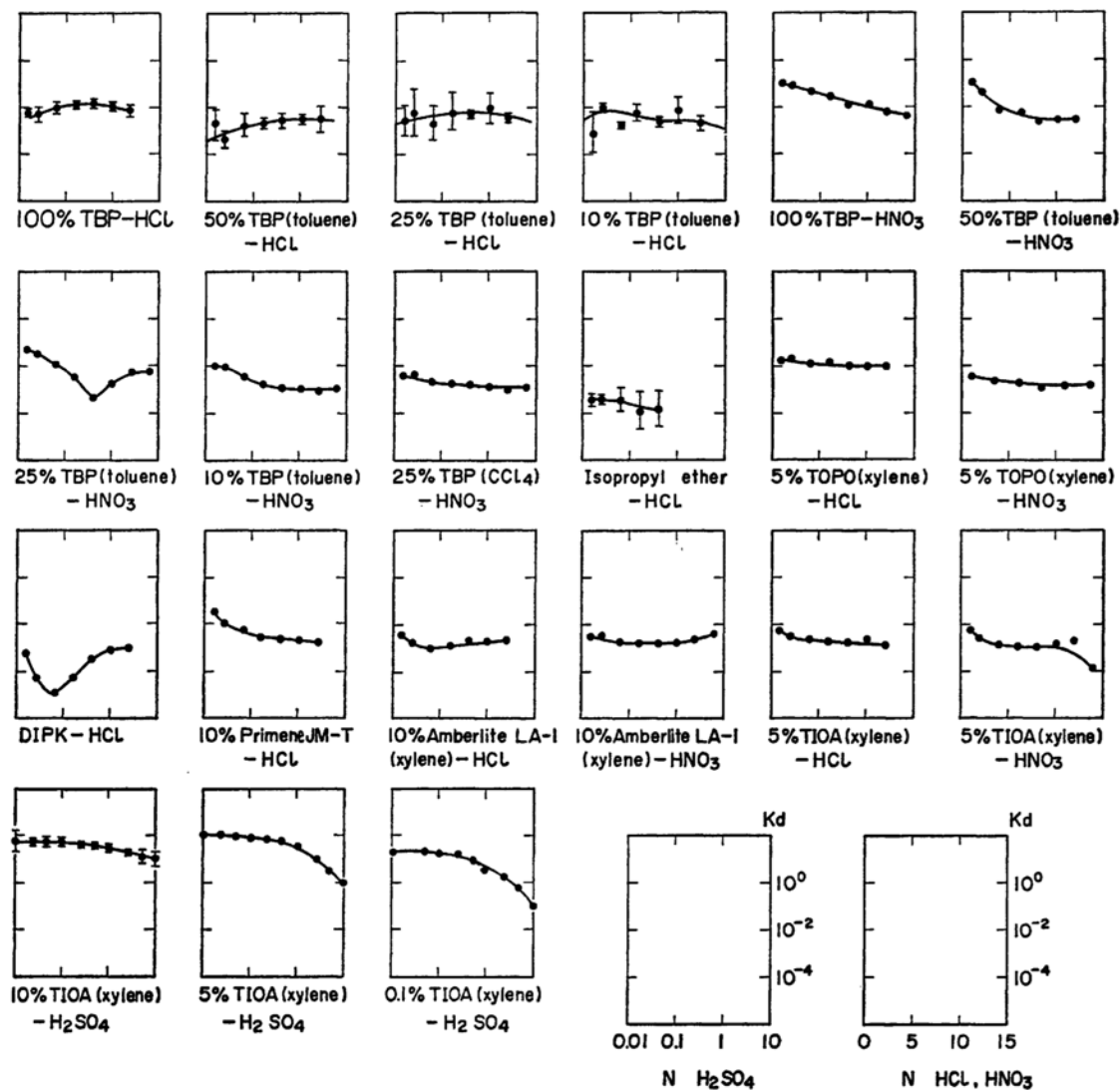


Fig. 1. Extraction behavior of Rh.