

Tc-HA complex with increasing pH and almost all technetium in the precipitate was found again in the solution at pH 11, although technetium dioxide did not show such behavior. Thus, the amount of technetium released in the solution by changing pH could be attributed to that of the Tc-HA complex, even when the precipitate includes Tc-HA and $\text{TcO}_2 \cdot n\text{H}_2\text{O}$.

Fig.1 shows the change of the Tc-HA amount depending on the Sn^{2+} amount. The data scattered along the line with a slope of 0.5, and it suggests that technetium is reduced to a valency state of 3+ in the Tc-HA complex formation.

2. Tc-HA complexation at lower concentration of Tc

The Tc-HA complexation behavior was investigated at lower concentration of technetium by using $^{95\text{m}}\text{Tc}$ (61 d). $^{95\text{m}}\text{Tc}$ was obtained by proton bombardment of molybdenum by using an AVF cyclotron at Cyclotron Radioisotope Center, Tohoku University. $^{95\text{m}}\text{Tc}$ was separated from the molybdenum target by MEK (methylethylketone) and TPAC (tetraphenylarsonium chloride) extraction [4].

The reaction condition is almost the same mentioned before, except the low concentration of technetium, *ca.* 10^{-11} M. In this case, the macroscopic amount of Sn-HA was found as precipitate which included the microscopic amount of Tc-HA. Furthermore, considerable fraction of technetium was found in the supernatant as chemical forms of Tc-HA and TcO_4^- by Sephadex G-15 gel chromatographic separation. $\text{TcO}_2 \cdot n\text{H}_2\text{O}$ in relatively small percentage was also produced and was absorbed on the column.

Fig.2 shows the distribution of technetium species depending on the initial concentration of humic acid under the same concentrations of $^{95\text{m}}\text{Tc}$ and Sn^{2+} . The total

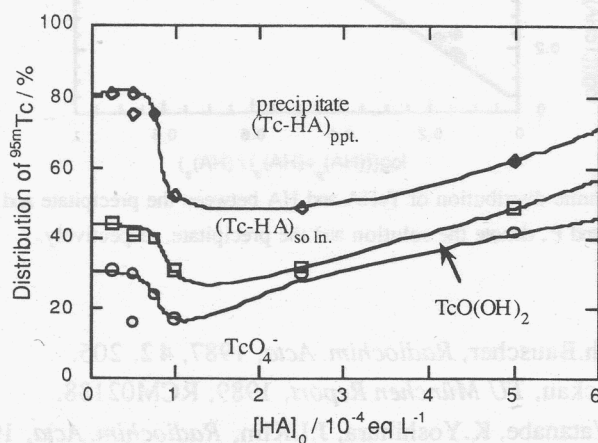


Fig.2. Distribution of $^{95\text{m}}\text{Tc}$ species depending on the initial concentration of humic acid. ($[\text{Sn}^{2+}] = 10^{-5}$ M).