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SUMMARY

The kinetics of ternary complex formation between  $\text{Ni}(\text{NTA})(\text{H}_2\text{O})_2^{1-}$  and acetylacetonone in aqueous solution have been studied by conventional spectrophotometry at  $25^\circ\text{C}$  and  $0.30 \text{ mol dm}^{-3}$  ( $\text{NaCl}$ ) ionic strength, using 2,4,6-collidine and 2,6-lutidine as buffer. The measurement were carried out at pH 7.25 and pH 7.55 with the monitoring wavelength of 290 nm.

The rate-determining step is proposed to be the proton transfer process from keto form of acetylacetonone(KH) together with the complex formation between  $\text{Ni}(\text{NTA})(\text{OH})(\text{H}_2\text{O})_2^{2-}$  and KH. The rate constants for the proton transfer step via buffers are

$$k_{12}(\text{collidine}) = 10.50 \text{ mol}^{-1} \text{ dm}^3 \text{ s}^{-1}$$

$$\text{and } k_{12}(\text{lutidine}) = 7.75 \text{ mol}^{-1} \text{ dm}^3 \text{ s}^{-1}$$

The rate constant for the complex formation of  $\text{Ni}(\text{NTA})(\text{OH})(\text{H}_2\text{O})_2^{2-}$  and KH( $k_{13}$ ) is  $1.936 \times 10^3 \text{ mol}^{-1} \text{ dm}^3 \text{ s}^{-1}$ . The stability constant of the complex, which has not been determined experimentally, is estimated to be 5000 ( $\log K = 3.699$ ).