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KINETIC STUDY OF THE REACTION OF Fe (III) AND Fe(NTA)
WITH PYRIDOXAL ISONICOTINOYL HYDRAZONE

by

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ABSTRACT

The kinetics of the complexation reaction of pyridoxal isonicotinoyl hydrazone (PIH) with Fe(III) and Fe(NTA) have been investigated in aqueous solution of ionic strength 0.30 M (NaNO_3), hydrogen ion concentration 0.05-0.104 M (HNO_3) for Fe-PIH system, and 0.11-0.19 M(HNO_3) for Fe(NTA)-PIH system, and temperature of 25 °C. The reactions involve the formation of tridentate complexes and data have been obtained from spectrophotometric measurements. UV was found that the only one complex species, $\text{Fe}(\text{H}_2\text{L})^{3+}$, was formed.

In system of Fe-PIH, the rates of reactions are dependent on the hydrogen ion concentration and a mechanism involving Fe^{3+} , FeOH^{2+} , and $\text{Fe}_2(\text{OH})_2^{4+}$ metal species is proposed. For the system of Fe(NTA)-PIH, the rates of reactions are also dependent on the hydrogen ion concentration though a mechanism involving only Fe(NTA), and $\text{FeCH}(\text{NTA})^{1-}$ metal species is proposed. The results are discussed and rationalized in terms of previously published data for reactions of iron (III) with other positive-charged multidentate ligand and for reactions of ternary complex systems.