

**Kinetics of Aquation of Tris-(1,10 phenanthroline) Iron (II) in Triton X 100/Hexanol/
Cyclohexane Reverse Micellar Medium**

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Abstract — The aquation of tris-(1,10 Phenanthroline) iron (II) ($[\text{Fe}(\text{phen})_3]^{2+}$) has been reported to be immeasurably slow at pH equal to 6.97. But, the reaction is accelerated in the Triton X-100/hexanol/cyclohexane reverse micellar medium. The reaction obeys simple first order kinetics with no evidence of auto inhibition. The first order rate constant (k_1) has been determined at different values of W ($[\text{H}_2\text{O}]/[\text{Triton X-100}]$). The rate (k_1) decreases with increasing value of W . k_1 increases with increase in Triton X-100 concentration, at constant values of W showing that the reaction takes place at greater speed at the micellar interface. The kinetic results can be interpreted by the uni molecular pseudo phase model. The effect of W on rate (k_1) is more pronounced in the range, $W = 1.7$ to 4.2 but less pronounced at higher W . The reaction is further accelerated by Cl^- and SCN^- ions and the kinetic results provide an unambiguous evidence for the formation of ion pairs between the cation $[\text{Fe}(\text{phen})_3]^{2+}$ and both of these anions. The formation of such ion pairs has not been observed in aqueous medium but has been reported earlier in water alcohol mixtures. This result therefore provides evidence for the lower micro polarity of the solubilised water compared to ordinary water.
