Kinetics and Mechanism of Oxidation of Dimethylglyoxime Chromium (III) Complex by Periodate

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Abstract : The kinetics of oxidation of binary complex [CrIII(DMG)2(H2O)4]+ to Cr(VI) by periodate has been investigated spectrophotometrically where, [DMG= Dimethylglyoxime] at 370nm under pseudo first order reaction conditions in aqueous medium over 20- 40° C range, PH 2-3, and I=0.07 mol dm-3. The reaction is first order with respect to both [IO4-] and Cr(III), and the reaction increased with PH increased. Thermodymanic activation parameters have been calculated. It is suggested that electron transfer proceeds through an inner sphere mechanism via coordination of IO4- to Cr (III). The reaction obeys the following rate law Rate= {k1 K5+ k2 K6 K2 } [Cr III (DMG)2(H2O)4]+ [H5IO6].

Keywords : chromium, dimethylglyoxime, kinetics, oxidation, periodate

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