World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:9, No:08, 2015

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

Authors : Ahmed A. Abdel-Khalek, Reham A. Mohamed

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- 40ºC 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
Conference Title : ICCSE 2015 : International Conference on Chemical Science and Engineering
Conference Location : Venice, Italy
Conference Dates : August 13-14, 2015

Open Science Index, Chemical and Materials Engineering Vol:9, No:08, 2015 publications.waset.org/abstracts/30916.pdf