



Ruthenium (III) catalyzed Oxidation of Cefixime by Hexacyanoferrate (III) in Alkaline medium: A Kinetic and mechanistic approach

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Accepted on 9th August 2017, Published online on 27th September 2017

ABSTRACT

Kinetics of ruthenium (III) catalyzed oxidation of cefixime by Hexacyanoferrate (III) has been studied spectrophotometrically. The reaction is found to be first order with respect to concentration of hexacyanoferrate and catalyst Ruthenium. It was found to be fractional order dependence on substrate concentration and alkali. The reaction product of the study was found by LC-MS method. A suitable mechanism involving complexation between CEF and $[Ru(H_2O)_5OH]^{2+}$ was proposed. The stoichiometry of the reaction was found to be 2:1 which explains that for one mole of cefixime required two moles of hexacyanoferrate (III) ion. The activation parameters like E_a and ΔS^\ddagger were calculated & the values observed as $38kJ mol^{-1}$ and $-203kJ mol^{-1}$ respectively.

Keywords: Kinetics, Mechanism, Oxidation, Cefixime, Hexacyanoferrate (HCF).
