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Kinetics and Mechanism of Ir(III)-Catalyzed Oxidation of D-Galactose by Potassium Iodate in Aqueous Alkaline Medium

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ABSTRACT

The kinetics of Ir (III)-catalyzed oxidation of galactose by potassium iodate in alkaline medium have been made at 40^0C. The reaction exhibits first-order kinetics with respect to Ir (III).Unity order at low concentrations of galactose, OH^- and IO_3^-becomes zero order at their higher concentrations throughout their variations. Negligible effects of Cl^- and ionic strength of the medium on the rate of oxidation have been noted. The reaction was studied at four different temperatures and observed values of rate constants were utilized to calculate various activation parameters. A most probable reaction mechanism consistent with the observed kinetic data and spectral evidence has been proposed for the oxidation of galactose.

Keywords: Mechanism, D-Galactose, Potassium iodate, Alkaline medium, Ir(III) Catalysis.