



Kinetics and Mechanism of Oxidation of Caffeine by Permanganate ion in Aqueous Sodium Hydroxide Solution

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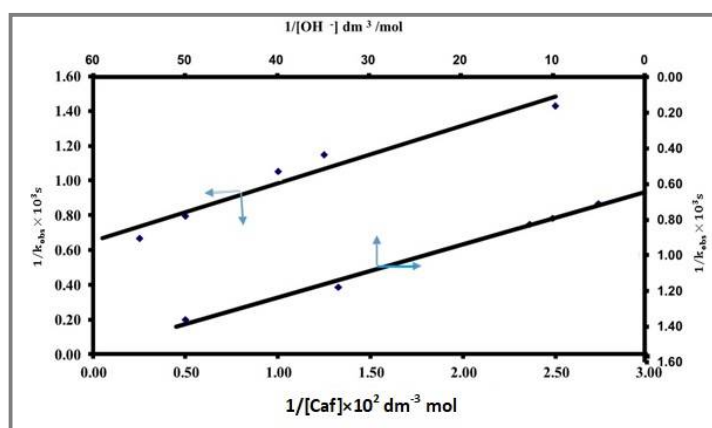
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Accepted on 17th October, 2018

ABSTRACT

The kinetics of the oxidation of Caffeine by permanganate ion in aqueous sodium hydroxide medium was studied at 301K. The reactions followed kinetics with a first-order dependence of rate on permanganate ion and less than unit order dependence on both the alkali and caffeine concentrations. The reaction is catalyzed by OH⁻ ions. The reaction was studied at different temperatures and activation parameters were evaluated. The reaction constants involved in the mechanism were computed. The observed results have been explained in terms of a mechanism and a relevant rate law has been deduced.

Graphical Abstract



Variation of $1/k_{obs}$ versus $1/[Caf]$ and Variation of $1/k_{obs}$ versus $1/[OH^-]$

Keywords: Caffeine, Potassium permanganate, Kinetics and alkaline solution.