

## Accepted Manuscript

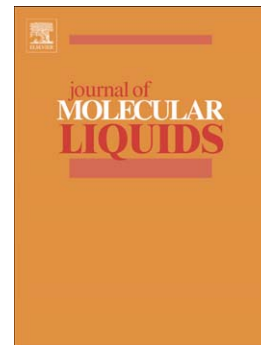
Anionic-micelles assisted oxidation of tartaric acid by permanganate: A kinetic and mechanistic approach

Zoya Zaheer, Elham Shafik Aazam

PII: S0167-7322(16)33348-7  
DOI: doi:[10.1016/j.molliq.2016.12.081](https://doi.org/10.1016/j.molliq.2016.12.081)  
Reference: MOLLIQ 6764

To appear in: *Journal of Molecular Liquids*

Received date: 26 October 2016  
Revised date: 16 December 2016  
Accepted date: 22 December 2016



Please cite this article as: Zoya Zaheer, Elham Shafik Aazam, Anionic-micelles assisted oxidation of tartaric acid by permanganate: A kinetic and mechanistic approach, *Journal of Molecular Liquids* (2016), doi:[10.1016/j.molliq.2016.12.081](https://doi.org/10.1016/j.molliq.2016.12.081)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Anionic-micelles assisted oxidation of tartaric acid by permanganate: A kinetic and mechanistic approach****Zoya Zaheer<sup>\*</sup>, Elham Shafik Aazam***Department of Chemistry, Faculty of Science, King Abdulaziz University, P.O. Box 80203, Jeddah, 21589, Saudi Arabia*

---

**Abstract** In this study, we demonstrate the catalytic effects of sodium dodecylbenzenesulphonate (SDBS) on the oxidation of tartaric acid by permanganate. UV-visible spectroscopic data revealed that the reaction proceeds through the formation of a transient species between the reactants. The values of  $\Delta\epsilon = 12.8 \times 10^5 \text{ mol}^{-1} \text{ dm}^3 \text{ cm}^{-1}$  and  $K_c = 6.5 \times 10^{-4} \text{ mol}^{-1} \text{ dm}^3$  were calculated from the kinetic data. Reaction-time profiles show that the reaction has an induction period (slow step) followed by an auto-acceleration path (fast step). SDBS is found to be stable in presence of  $\text{MnO}_4^-$ . The reaction follows first-order kinetics with respect to tartaric acid under pseudo-first-order conditions in absence and presence of SDBS. The observed results are discussed in terms of pseudo-phase model of the micelles proposed by Menger and Portony. The values of activation energy =  $99 \text{ kJ mol}^{-1}$  and  $59 \text{ kJ mol}^{-1}$  were calculated by using Arrhenius equation, respectively, in absence and presence of SDBS micelles. The probable mechanisms have also been proposed and discussed. Presence of silver ions also catalyzed of reaction rates.

**Key words:** Micellar effects; Kinetics; Tartaric acid; Permanganate

---

\*Correspondence to: E-mail : zoya.zaheer@gmail.com (Z. Zaheer).

Download English Version:

<https://daneshyari.com/en/article/5409168>

Download Persian Version:

<https://daneshyari.com/article/5409168>

[Daneshyari.com](https://daneshyari.com)