

LABORATORY REPORT

EXPERIMENT 1

THE KINETICS OF THE REACTION OF

PERMANGANATE IONS WITH

OXALIC ACID IN ACIDIC SOLUTION

NOTE: This experiment is intended to be completed in 20-30 min. The plotting is to be done afterwards. Each experiment should require approximately 15 minutes.

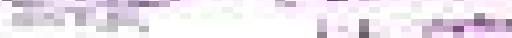
THE OBJECTIVE: The aim of this experiment is to determine the rate of reaction of permanganate ions with oxalic acid in acidic solution. The rate of reaction will be determined by measuring the time taken for the color change to occur.

1. THEORETICAL BACKGROUND & OBJECTIVE

Permanganate ions are a powerful oxidizing agent.

It is used in the titration of oxalic acid with permanganate.

The reaction is as follows:



Substance	Relative rate of reaction (estimated)
$\text{H}_2\text{C}_2\text{O}_4$	1
$\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$	1
$\text{K}_2\text{C}_2\text{O}_4$	1
$\text{Na}_2\text{C}_2\text{O}_4$	1

2. OBJECTIVE AND THEORY

The aim of this experiment is to determine the rate of reaction of permanganate ions with oxalic acid in acidic solution.

The reaction is as follows:



Time	Concentration of MnO_4^-
0	0.00
10	0.00
20	0.00

The reaction is first order with respect to permanganate ions and second order with respect to oxalic acid. The rate of reaction is determined by measuring the time taken for the color change to occur.

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