

Exp. No.	Experiment/Subject	Date
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Always keep the waste in a breaker.

first titration - "Scout titration"

Add 10 mL oxalic solution further into a clean 125 mL Erlenmeyer. Touch the the last drop on the buret, rise is int flask.

(b) Add 2 drops of the phenolphthalein indicator solution

(c) Add the basic solution in first. decrease the rate of NaOH until into pink and mix it -

d. Record the second buret reaction

e. Repeat the titration

f. Calculate molarity and if <sup>isn't</sup> within 1% do a third titration.

(3) determination of Acetic Acid in Vinegar

(a) Empty the buret that have oxalic acid

(b) Rinse the buret and fill it with vinegar.

(c) do the same procedure as 2 but with vinegar instead of oxalic acid

(MW of acetic acid is 60.05 mL.)

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Table ①

	Trial One	Trial two	Trial three
Volume of Oxalic Acid (mL)	10 mL	10 mL	10.1 mL
Moles of Oxalic Acid (moles)	<del>0.0589</del>	<del>0.0589</del>	<del>0.0589</del>
Initial Volume of NaOH (mL)	47.20	48.15	41.90
Final Volume of NaOH (mL)	28.15	41.90	31.95
Delivered Volume of NaOH (mL)	19.05	7	9.95
Moles of NaOH (moles)	<del>0.376</del>	<del>0.376</del>	<del>0.1966</del>
Molarity of NaOH (M)	2.17	16	0.889
Average Molarity NaOH	19.0589	19.0589	19.0589

Table ②

	Trial One	Trial two	Trial three
Volume of Acetic Acid Sol'n (mL)	10 mL	10 mL	10 mL
Mole of Acetic Acid Sol'n (moles)	<del>0.1315</del>	<del>0.1315</del>	<del>0.1315</del>
Initial Volume of NaOH (mL)	31.95	23.75	15.35
Final Volume of NaOH (mL)	23.75	15.35	5.90
Delivered Volume of NaOH (mL)	8.2	8.4	9.45
Average Molarity NaOH (M)	<del>0.0208</del>	0.021	0.02375
	* See Table 1	16.569	18.0
Molarity of Acetic Acid (M)	16.17	16.56	18.0
Average Molarity of Acetic acid (M)	30.73		

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Calculation:

$$\text{Mole. W. Oxalic acid dihydrate} = 126.1 \text{ g/mol}$$

$$10.0 \text{ mL} \cdot \frac{7.89 \text{ g}}{1 \text{ mL}} = \frac{7.89}{126.1} \times 0.062$$

$$19.05 \text{ mL} \cdot \frac{0.789}{1} = \frac{15.03045}{40.00}$$

$$7 \cdot \frac{0.789}{1} = \frac{5.523}{40.00}$$

$$9.95 \cdot \frac{0.789}{1} = \frac{7.8505}{40.00}$$

$$= 1966$$

~~error~~ = "

Observation:

Oxalic Acid is clear in begin of add the NaOH  
However it have turning pink when the <sup>desired</sup> NaOH reach near to  
mL. ~~set~~ I was trend that as you get closer to 10mL it  
have turn dark pink but if below 7 or 6 it's light  
pink.

Vinegar is yellow but turns pink and same trend  
as Oxalic Acid.

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Exp. No. 7	Experiment/Subject Volumetric Analysis: Titration of Analysis	Date
Name	Lab Partner Emmeenkeilash	Locker/ Desk No.
		Course & Section No. 213 203

## Volumetric Analysis: Titration of Analysis

Reference: "An Experiment in Thinking of Scientifically" D.J. Saorcella  
Chem Ed. 69.333 (1992)

Purpose: determined the concentration of acetic acid in a vinegar.

Material: buret, breaker, cylinder, Volumetric flask, ring stand

Procedure: Caution: Oxalic Acid is corrosive

1. Preparation of Oxalic Standard solution

a. Weigh - 3g of pure oxalic acid crystal (Mol WT = 126 g.mol<sup>-1</sup>)

b. Transfer crystals to 100mL volumetric flask and add 75 mL of d-S water mix it until solution is complete.

c. Wait till its dissolve and fill the volumetric flask to the mark with d-S water, add the portion. Stopper the flask and mix.

2. Standardization of NaOH solution

a. Rinse two burets with tap water and d-S water and dry it.

b. Rinse one buret with NaOH solution completely the buret.

c. fill the buret with NaOH solution full up to 0mL. full entrance of buret without passing 0.00mL.

d. Rinse the second buret with oxalic acid and fill it with standard oxalic acid

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