

VIRTUAL EXPERIMENT 1: ACID-BASE TITRATION

Learning Outcomes

Students should be able to:

- use virtual lab to perform acid-base titration and
- plot the titration curve.

Chemicals

- Stockroom > Solutions > Strong Acids > 0.1 M HCl
- Stockroom > Solutions > Strong Base > 0.1 M NaOH
- Stockroom > Solutions > Indicators > Phenolphthalein
- Stockroom > Solutions > Indicators > Methyl Orange

Instruments

- Stockroom > Glassware > Erlenmeyers > 250 mL Flask
- Stockroom > Glassware > Other > 50 mL Burette
- Stockroom > Glassware > Pipettes > 25 mL Pipette

Procedure

1. Collect all chemicals and glassware and put them in the workbench. Note: you might need to rearrange your workbench if it's full.
2. Drag 0.1 M HCl onto a 50 mL burette and pour 50 mL (precise) of 0.1 M HCl into the burette. You can now remove HCl from your workbench.
3. Drag 25 mL Pipette onto 0.1 M NaOH and withdraw 25 mL (precise). Then drag the pipette onto the empty Erlenmeyer flask (250 mL) and pour 25 mL of 0.1 M NaOH (precise). Rename the flask as "ANALYTE"
4. Drag phenolphthalein onto the ANALYTE flask and pour 2-3 mL (realistic) of phenolphthalein. The solution should become pink in color.
5. Drag the burette onto the ANALYTE flask and start transferring 0.1 M HCl 1.00 mL at a time (precise) until 20 mL, then followed by 0.5 mL until 5 mL. Notice the color change, go as low as 0.01 mL until stop. Record the pH each time. Stop when the color of the analyte changes from pink to colorless.
6. Drag Methyl Orange indicator and pour 2-3 mL (realistic) into the ANALYTE flask. The color of the solution should turn to orange.
7. Repeat step 5 using 0.01 mL at a time. Stop when the color turn from orange to red. For recording purposes, drop a few more 0.1 M HCl into the analyte and record the pH.
8. Plot the pH versus Volume (M) HCl titration curve. Label the point where the titrant change color from pink to colorless and from orange to red (end points). Submit your data and plot to the lab instructor as pre-lab report.

