1 Zielsetzung

The aim of this experiment is to determine the titration of an acid with a base using a standardized procedure. THEORETICAL BACKGROUND Titration is a common analytical technique used to determine the concentration of a substance, such as an acid or a base, by reacting it with a known quantity of another substance, called the titrant. The reaction is usually accompanied by a change in the physical or chemical properties of the system, which can be measured and used to determine the concentration of the original substance.

2 Materialien und Geräte

* 10 mL of unknown acid solution * 10 mL of base solution (sodium hydroxide) * Pipettes (1 mL and 10 mL) * Burettes (25 mL and 100 mL) * Thermometer * Stopwatch

3 Durchführung

1. Measure 10 mL of the unknown acid solution into a clean beaker. 2. Measure 10 mL of the base solution (sodium hydroxide) into a second clean beaker. 3. Using a pipette, slowly add the base solution to the acid solution in the first beaker while stirring with a glass rod. 4. Continue adding the base solution until the reaction is complete, which is indicated by the appearance of a permanent blue color in the solution. 5. Measure the volume of the added base solution using a burette and record the volume as "X mL". 6. Measure the temperature of the solution at regular intervals during the titration using a thermometer and record the temperatures. 7. Use the stopwatch to measure the time taken for the reaction to complete.

4 Ergebnisse und Beobachtungen

Observe the reaction carefully and note any changes in the physical or chemical properties of the solution, such as color change, frothing, or bubbling.

5 Berechnungen und Auswertung

Use the formula: Volume of base solution = (Concentration of acid solution x Volume of acid solution) / (Molarity of base solution x 100) to calculate the concentration of the unknown acid solution.

6 Diskussion

Interpret the results of the titration and discuss any implications for the identity of the acid.

7 Schlussfolgerung

Based on the results of the titration, determine the identity of the acid and record the conclusion in the laboratory notebook. Please note that this is a simplified version of the protocol and may need to be adapted depending on the specific requirements of your experiment.