Experiment: Investigating the physical and chemical properties of acetic acid
Instruction: Using the equipment and reagents listed below, investigate the properties of acetic acid such as odour, physical state, colour, flammability, pH, reactions with metal, metal oxide and hydroxide.
Reagents: acetic acid, methyl orange solution, phenolphthalein solution, Mg, NaOH, CuO, Na_2CO_3, H_2SO_4
Equipment: test tubes, burner, combustion spoon, wooden test tube holder

Instruction

1. **Odour, physical state, colour**
2. **Flammability test**
   Place a few drops of acetic acid on the combustion spoon, then place it in the flame of the burner.
3. **pH test**
   Add a few drops of methyl orange solution to the test tube of acetic acid.
4. **The reaction with magnesium**
   Place a few magnesium filings into the test tube with acetic acid. Bring a match to the outlet of the test tube.
5. **The reaction with copper(II) oxide**
   Add a pinch of copper(II) oxide to a test tube with 2 cm^3 of acetic acid and heat the test tube for a few minutes over a burner flame.
6. **The reaction with sodium hydroxide**
   Add a few drops of phenolphthalein to 2 cm^3 of sodium hydroxide, then slowly add the acetic acid solution.
7. **Investigating the course of the reaction with sodium carbonate and sulphuric acid - comparing the strengths of the acids**
   Add a small amount of sodium carbonate to the 1st test tube with 2 cm^3 of acetic acid, and to the 2nd test tube add a small amount of sodium acetate, then add 2 cm^3 of sulphuric acid. Heat the test tubes for a few minutes in a burner flame.

State your observations and form a conclusion.

Observations:

Conclusions: