A microscale study of gaseous diffusion

In this experiment you will be observing the diffusion of the gases ammonia and chlorine. You will be doing this by looking for colour changes as the gases react with drops of test solutions.

Students must wear eye protection.

Instructions

1. Cover the worksheet with a clear plastic sheet.
2. Place two drops of copper(II) sulphate solution in each square (except the one with the circle) of the left hand grid (the one labelled ammonia).
3. Place one drop of potassium iodide solution in each square (except the one with the circle) of the right hand grid (labelled chlorine). Add one drop of starch solution to each drop.
4. Cut the bottom off two plastic pipettes to make a small vessel and place each on the square with the circle.
5. Carefully put four drops of ammonia in the vessel in the ‘ammonia’ grid and quickly place a well-plate lid over the grid.
6. Carefully put two drops of bleach and two drops of hydrochloric acid in the vessel in the ‘chlorine’ grid and quickly place a well-plate lid over the grid.
7. Record all your observations over the next 20 min and give explanations.
Health & Safety

Students must wear suitable eye protection (Splash resistant goggles to BS EN166 3).

Ammonia solution, concentrated NH$_3$ (aq) is CORROSIVE.

Potassium iodide, 0.2 mol dm$^{-3}$, KI(aq) is low hazard.

Hydrochloric acid, 1 mol dm$^{-3}$ HCl (aq), is low hazard.

Copper(II) sulphate solution, 0.2 mol dm$^{-3}$, CuSO$_4$ (aq) causes eye damage and is toxic to aquatic life.

Credits

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Health & safety checked May 2018

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