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9. Molar Volume of a Gas

Purpose:

> To practice calculating the molar volume of a gas by mixing magnesium metal and hydrochloric acid to form hydrogen gas, then using the mass of magnesium used and volume of hydrogen collected to calculate the volume of one mole of hydrogen gas.

Procedure:

1. Fill a 400mL beaker two-thirds full of room temperature water.
2. Cut a piece of magnesium ribbon 1-1.5cm long. Mass the magnesium ribbon.
3. Roll the magnesium ribbon into a loose coil. Tie it with a piece of string on one end,approximately 25cm in length.
4. This step requires the use of 6M hydrochloric acid, which is caustic and corrosive. Pour approximately 10mL of 6M HCl into a 50mL eudiometer.
5. While holding the eudiometer in a slightly yipped position, slowly pour distilled water into the eudiometer, being careful not to mix the HCl and water. Completely fill the eudiometer so that there is no air.
6. Lower the magnesium coil into the water in the eudiometer to a depth of about 5cm. Insert the rubber stopper into the open end of the eudiometer to hold the thread in place. The one-hole stopper should displace some water from the eudiometer.
7. Cover the hole of the stopper with your finger and invert the eudiometer into the 400mL beaker of water.

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