Zinc and HCl

Production of hydrogen gas

Chemicals and Equipment Needed

- d-H_2O
- 6 M HCl – **K1**
- Mossy zinc – **G3**
- 2-300 mL tall beakers – **Q2**
- 2 Plastic petri dishes – **P3**
- Matches – **U1**
- Wood stick – **U1**
- Long forceps – **U2**
- Black background – **A1**
- Weigh boat – **A3**

Hazards

- 6 M HCl (and 6 M NaOH for disposal) can cause burns if mishandled. Wear gloves, goggles, and lab coat when handling these substances. If skin exposure occurs, flush area with water and seek medical attention as necessary.

Preparation

- Place 2-3 pieces of mossy zinc in the weighboat. Fill one beaker with ~100 mL 6 M HCl and the other with 100 mL d-H_2O. Lid and label.

Presentation

- Drop the mossy zinc into the HCl. The reaction is immediate:
  $Zn + 2\ H^+\ (aq) \rightarrow Zn^{2+}\ (aq) + H_2\ (g)$
- Light the wood stick and hold it over the beaker to hear the pop-pop explosions as the H_2 (g) ignites:
  $2\ H_2\ (g) + O_2\ (g) \rightarrow 2\ H_2O\ (g)$
- To quench the reaction, use the forceps to remove the zinc pieces and drop them in the beaker of water

Clean Up

- Neutralize the remaining HCl with 6 M NaOH, then flush down the drain with plenty of water. Dispose of the zinc pieces in the white waste container.

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AMM