Required Training

UC Lab Safety Fundamentals

Required PPE

Lab coat, safety glasses/goggles,
nitrile gloves

Equipment

150 mL beaker

Chemicals

80 g sucrose

Large catch pan

20 mL conc. sulfuric acid

Procedure:

1. Pour 20 mL concentrated sulfuric acid on the sucrose in the tall beaker in a catch pan.
2. The sucrose will dehydrate and form a large black column of black carbon-carbon dioxide foam.

Discussion:

This demonstration shows the dehydration of the organic molecule, sucrose. It follows the reactions below:

\[
\text{C}_{12}\text{H}_{22}\text{O}_{11} \rightarrow 12 \text{ C} + 11 \text{ H}_2\text{O} -919 \text{ kJ/mol}
\]

\[
\text{C}+\text{O}_2 \rightarrow \text{CO}_2 -394 \text{ kJ/mol}
\]

\[
\text{C}_{12}\text{H}_{22}\text{O}_{11}+12\text{ O}_2 \rightarrow 12\text{ CO}_2 + 11\text{H}_2\text{O} -5641 \text{ kJ/mol}
\]

Hazards:

Concentrated sulfuric acid is corrosive and may sputter out of the reaction vessel—always wear PPE and treat any spills with sodium bicarbonate or another suitable chemical before cleaning the area with water.

SOP:

Corrosive – Sulfuric Acid

Disposal (by Storeroom)
Return the beaker, catch pan, and any auxiliary waste created to the storeroom for proper neutralization and disposal.