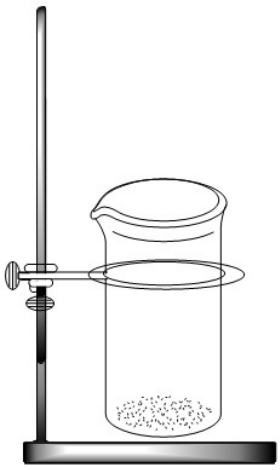
Black Carbon Snake

For classrooms with in-bench hoods

Addition of sulfuric acid to sugar dehydrates the molecule, producing steam and a rising column of solid carbon.



Chemicals and Equipment Needed

- Concentrated H_2SO_4 – **K2**
- Sugar – **L3**
- 600 mL tall beaker – **Q2**
- 100 mL graduated cylinder – **Q3**
- Short ringstand and iron ring – **J**
- Grey tub – **top of E/F**
- Glass stir rod – **U1**
- Gloves – **U2**

Hazards

- Concentrated sulfuric acid is extremely dangerous. If skin exposure occurs, flush area with water for 15 minutes and seek medical attention as necessary.
- You must wear goggles and gloves, and a lab coat is recommended. This demo must be performed in a room with an in-bench hood. This demo is extremely stinky.

Preparation

- Make sure the 600 mL beaker will fit in the iron ring
- Measure ~200 mL sugar into the beaker and set in the iron ring, then lower into plastic bin.
- Measure out 100 mL H_2SO_4 into the graduated cylinder. Stopper, parafilm, and label.
- On delivery, set up next to the in-bench hood and advise the lecturer to turn it on before presenting the demo.

Presentation

- Turn on in-bench hood
- While wearing gloves, pour the concentrated H_2SO_4 onto the sugar and stir thoroughly. The concoction will turn yellow, dark yellow, light brown, dark brown, then black. At that point, a black carbon “snake” will rise up out of the beaker.
- Keep stirring until the mixture is almost black. The snake will rise out slowly. (It always falls over)

Clean-Up

- On pick-up, place the entire bin in the hood and allow to cool and off-gas for a while.
- Wearing gloves, rinse the snake thoroughly and throw away. Try not to let it go down the drain, because it will clog. Wash the glassware thoroughly. It may take some soaking and scrubbing to get all the carbon off the beaker.

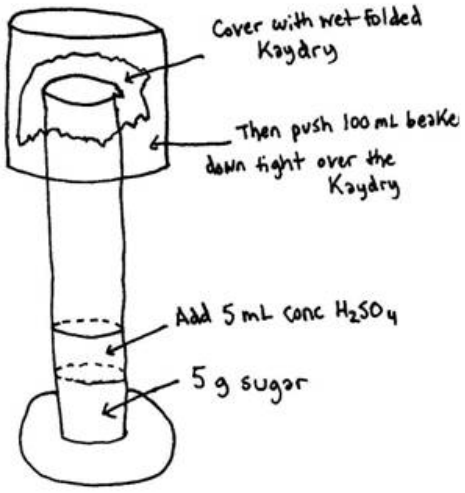
NOTE: Instructions for Black Carbon Snake in rooms without a hood on reverse.

Black Carbon Snake

For classrooms without hoods

Chemicals and Equipment Needed

- Squirt bottle of d-H_2O
- Concentrated H_2SO_4 – **D2**
- Sugar – **E2**
- 10 mL graduated cylinder – **K3**
- 100 mL graduated cylinder – **K4**
- 100 mL beaker – **K3**
- Large crystalizing dish – **J3**
- Gloves – **U2**
- Rubber stopper for 10 mL cylinder – **U3**
- Kaydry – **A2**
- White background – **A1**



Hazards

- Concentrated sulfuric acid is extremely dangerous. If skin exposure occurs, flush area with water for 15 minutes and seek medical attention as necessary.
- You must wear goggles and gloves, and a lab coat is recommended.

Preparation

- Weigh out 5 g sugar and pour into 100 mL graduated cylinder.
- On delivery set the large graduated cylinder in the crystalizing dish in front of the white background, then measure out 5 mL H_2SO_4 into the small cylinder, label and stopper.

Presentation

- Fold the Kaydry into fourths and wet with water.
- While wearing gloves, pour H_2SO_4 onto the sugar. Lay the damp Kaydry over the mouth of the cylinder and wedge the beaker upside down on top of the Kaydry to contain the fumes from the reaction.
- It may take up to two minutes for the reaction to occur, but you will see a black carbon “snake” rise up the cylinder.
- If possible, have the demo removed soon after the reaction occurs.

Clean-Up

- On pick-up, place the whole assembly in the hood and allow it to cool and off-gas.
- Wearing gloves, rinse the snake thoroughly and throw away. Try not to let it go down the drain, because it will clog. Wash the glassware thoroughly. It may take some soaking and scrubbing to get all the carbon out of the cylinder.

Revised Summer 2019
AMM