

The Methanol Cannon

Purpose

To demonstrate a combustion reaction ignited by a spark.

Materials

2L heavy plastic bottle

Ring stand/clamp

Tesla coil

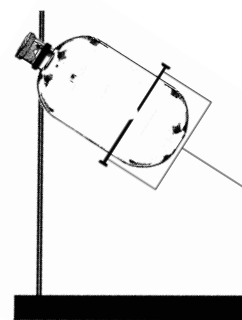
Cork stopper

Two nails

Methanol

Procedure

1. Insert two large nails into the sides of the bottle. The points of the nails should be separated by about ¼" sized gap.
2. Add about 1 mL of methanol to the bottle.
3. Shake the bottle to vaporize and distribute the alcohol.
4. Place a tight fitting cork into the mouth of the bottle.
5. Fasten the bottle to a ring stand using a clamp on the neck of the bottle.
6. Direct the cork up and away from the any students.
7. Turn on the Tesla coil and apply a spark from the coil to the head of one of the nails or attach ignitor wires to the nails and spark them.
8. A loud explosion will result and the cork will be propelled across the room.



Additional Information

1. The spark ignites the methanol vapor and a rapid combustion reaction will occur:
2. A blue flame of the reaction is clearly visible in a dark room.
3. Enough vapor may be left in the bottle for a second firing.
4. A smaller model for this combustion called a blaster and can be used to shoot a ping pong ball instead of a stopper.

Question for the Students

1. Write a balanced equation for the reaction.

Reference

Summerlin, L. & Ealy, J., Chemical Demonstrations, A Sourcebook for Teachers, 1985.