

HIGH SCHOOL DEMOS AND TRICKS OF THE TRADE

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OILY WATER

APPLICATIONS: This lab is simple in design and has many applications:

- a) Without identifying the materials, use this as an **inquiry** exercise for **observation, data gathering, and prediction**.
- b) Identify the materials and ask students to discuss **relative densities**.
- c) By timing the rate of disappearance of the solid state material, this can be a **qualitative exercise**. Predictions could include **developing hypotheses using different materials**.
- d) By measuring rates of melting and temperature changes, **differences in heat exchange of different materials** can be studied.
- e) Vary which material, solid or liquid, will have the food coloring added. This enables a good discussion of **solubilities** and **differences in the polarity** of materials.

MATERIALS

corn oil
water
yellow dye (to color water to resemble oil)
2 ice forms (must fit into cylinder opening)
red, blue or green dye for ice coloration

EQUIPMENT

2 tall glass cylinders
molds to make ice (empty film canisters)

PROCEDURE:

DAY BEFORE THE DEMO

1. Mix red, green or blue dye in small amount of water.
2. Pour the colored water into a film canister or shell of a tea light and freeze overnight.

DAY OF DEMO

1. Fill one tall glass cylinder with water to within 3 cm of the top.
2. Fill a second glass cylinder with corn oil to within 3 cm of the top.
3. Add a drop of yellow food coloring to the water and stir. Adjust the color so it nearly matches the color of the oil.
4. Place one colored ice sample into each cylinder.
5. Depending on which application you choose, direct the students to observe, time, etc.

VARIATION WITH DYES:

This demonstration assumes you will color the water (the polar material) using typical household dyes such as the McCormick brand.

You could use oil (non-polar) soluble dyes such as Wilton brand or other dyes for candy making, etc. In this case, do not color the frozen water. The oil can be colored if desired.

DISPOSAL: Pour the water contents down the drain. Pour oil into the ground or seal in a container and place in household garbage.