

Paraffin Paradox

Scientific Method Demonstrations



Introduction

A rectangular block of paraffin is exposed to a source of light from different directions creating a discrepant event. Students make observations, ask questions, and make a hypothesis about the block of paraffin.

Concepts

- Scientific method

Materials

Aluminum foil

Strong light source (flashlight, overhead projector, etc.)

Paraffin paradox block

Teflon[®] pan

Safety Precautions

The materials used in this activity are considered nonhazardous. Follow all laboratory safety guidelines.

Procedure

1. Without introduction, hold the paraffin paradox block so that a strong light source shines from below. Ask students to make observations.
2. Move the paraffin block so that the strong light source from above shines on it. Collect student observations.
3. Alternate the block between the light sources until the students have exhausted comments and are asking questions and offering hypotheses.
4. Display the paraffin block on edge and from various other angles in the light sources to stimulate additional comments and hypotheses.
5. Conclude with a list of student ideas on how the paraffin block is constructed and how it might be tested without destruction.

Disposal

The materials used in this activity may be saved for future use or thrown away in the regular trash.

Discussion

This is a good activity for early in the year to train students in making careful observations. Often they want to make hypotheses without recording data. It can be used to model the scientific method for conducting science.

The paraffin paradox block is constructed by cutting a piece of aluminum foil slightly smaller than the size of a rectangular block of paraffin. Carefully sandwich the foil between two blocks of paraffin. Gently fuse the two blocks of paraffin together by heating all edges in a teflon pan. Be sure none of the foil extends outside of the paraffin block. To give the whole apparatus a consistent look, it may be necessary to gently warm the large, rectangular faces, too.

An extension of this activity would be to provide groups of students with a paraffin paradox block and allow them to collect data in teams. However, students will often try to pry the blocks apart to solve the mystery.

Connecting to the National Standards

This laboratory activity relates to the following National Science Education Standards (1996):

Unifying Concepts and Processes: Grades K–12

Systems, order, and organization
Evidence, models, and explanation

Content Standards: Grades 5–8

Content Standard B: Physical Science, properties and changes of properties in matter

Content Standards: Grades 9–12

Content Standard B: Physical Science, structure and properties of matter

Flinn Scientific—Teaching Chemistry™ E-Learning Video Series

A video of the *Paraffin Paradox* activity, presented by Steve Long, is available in *Scientific Method Demonstrations*, part of the Flinn Scientific—Teaching Chemistry E-Learning Video Series.

Materials for *Paraffin Paradox* are available from Flinn Scientific, Inc.

Catalog No.	Description
P0003	Paraffin, Wax
A0019	Foil, Aluminum, Household, 25-ft.

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.