**Lava Lamp**

Visitors observe a working lava lamp and read explanatory copy.

**OBJECTIVES:**

Visitors learn that liquids may not be miscible because of differences in their molecular structures. They learn that temperature can affect the density of liquids.

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Lava Lamp

To do and notice:

1. Look at the two liquids in the lamp.
   - Which liquid is denser?
   - Can you definitely say that one is denser, or does it change?

2. Watch the lamp for a while.
   - What happens to the purple liquid?

What is going on?

Why don’t the two liquids mix? The clear liquid is an oil, and the purple one is a wax. Oil and wax don’t mix because of the differences in their molecular structures. Substances that don’t mix are said to be immiscible.

Why does the purple wax rise and fall? The wax is normally more dense than the oil and sinks to the bottom of the lamp. When you turn on the lamp, the light bulb heats the wax, causing it to expand, making it less dense (like the air in a hot air balloon). The expanding hot wax is less dense than the oil and floats to the top of the lamp. The top is cooler, so the wax cools, becomes more dense again, and sinks back to the bottom. This heating/cooling cycle is continuous.
MATERIALS

(with amounts to have on hand)
- Plexiglas shield (general storage)
- One lava lamp

Setup/Takedown Procedures

ORIGINAL SETUP

DAILY SETUP
- Turn on the lamp one hour before the lab opens.
- Put the lamp in front of a window with the double-sided public copy in the two-sided Plexiglas holder.
- Place the Plexiglas shield in front of the lamp.

WEEKLY TAKEDOWN
- Turn off and unplug the lamp.

RUNNING SUGGESTIONS
- Try not to shake the lamp — it creates many little purple globs that have trouble getting back together again.

EXTENSIONS
- Relate the lava lamp to hot-air balloons: when heated, both the wax in the lava lamp and the air in a hot-air balloon expand.
SAFETY & DISPOSAL

The lava lamp can become very hot; use caution when handling it.