Sensational Science!!

Try these experiments and learn about the scientific forces that hold everything together!

Make your own lava lamp!

-courtesy of homesciencetools.com

WHAT YOU NEED:

- Clear plastic bottle, tall glass or jar
- Vegetable oil
- Water
- Food coloring
- Alka-seltzer tablets (any brand)

WHAT YOU DO:

1. Fill the bottle most of the way with oil.
2. Fill the rest of the bottle with water.
3. Add a few drops of food coloring. Food coloring is water-based, so it will sink below the oil and color the water at the bottom of the bottle.
4. Break an Alka-seltzer tablet into a few small pieces, and drop them in the bottle one at a time.
5. Watch your lava lamp erupt into activity! As the chemical reaction slows down, simply add more Alka-seltzer.

THE SCIENCE:

A lava lamp works because of two different scientific principles:

- **Density** is the measurement of how much of a substance fits in a certain amount of space.

Water is more dense than oil–its molecules are packed more tightly. So it will sink below oil.

- **Polarity** means that a molecule carries a charge similar to how a battery does–it has a "+" side and a "-" side.

Water molecules are "polar," which means that on each water molecule, one end will connect with other molecules that have a positive charge, and one end will be drawn to molecules with a negative side. Oil molecules, however, are not polar–they aren't drawn to any other molecules. So oil and water don't mix!

When Alka-Seltzer tablets are dropped into water, the water allows the tablets' ingredients to react. This creates carbon dioxide gas bubbles. These stick to the water droplets and make them less dense than water, so they rise to the top of the flask.

Hatch a Dinosaur Egg

—courtesy of steampoweredfamily.com

Make a baking soda dinosaur egg and hatch it with vinegar!

WHAT YOU NEED:
Baking soda (each egg takes approximately ⅓ of a small box of baking soda)
Water
Food coloring
Syringes
White vinegar
Casserole dish or some other container
Dish soap
Small dinosaur toys
Parchment paper

WHAT YOU DO:

1) Color your baking soda by mixing in a few drops of baking soda until it is the color(s) you want.
2) Slowly add a few drops of water and mix with the colored baking soda, repeating just until it sticks together like a paste (1 box of baking soda takes about ¼ c of water).

3) Take a small handful of the baking soda paste mix and squish it together to make a small ball.
4) Press in a small dinosaur toy, then cover the toy by adding more paste until it looks like an egg.
5) Place your egg(s) on parchment paper and put in freezer for at least an hour.
6) When ready for a hatching, place egg(s) on the bottom of a casserole dish or other container and drizzle some dish soap around them.

7) Pour some vinegar into a cup and use a syringe to drip it over your egg.
8) Watch it hatch!!

THE SCIENCE: The molecules in baking soda react with the molecules in vinegar and turn into something new: water (with sodium and acetate ions in it) and carbon dioxide. Carbon dioxide is a gas, so it shows up as lots of bubbles that are released in the reaction.

More information: https://www.steampoweredfamily.com/hatch-dinosaur-eggs-with-science/

Fluffy Slime!

–courtesy of littlebinsforlittlehands.com Check out their website for more fun slime recipes!

Note: If you want your mom to let you make this, promise to keep it in a bag so it doesn't get on your floor! But if it does, pour a small amount of white vinegar over it and let it sit for a moment–then you can scrub it out with some water or ice cubes 😃.

WHAT YOU NEED:

- 1/2 Cup of Washable PVA School Glue
- 3 Cups of Foaming Shaving Cream
- 1/2 Tsp of Baking Soda
- Food Coloring
- 1 Tbsp of Saline Solution (Must contain both sodium borate and boric acid as ingredients)

WHAT YOU DO:

STEP 1. Measure 3 heaped cups of shaving cream into a bowl. You can also experiment with using less or more shaving cream for different textures!

STEP 2. Add 5 to 6 drops of food coloring.

STEP 3. Add 1/2 cup of glue to the shaving cream and gently mix.

STEP 4. Add 1/2 tsp of baking soda and mix.

STEP 5. Add 1 tablespoon of the saline solution to the mixture and start whipping. If your slime is too sticky, add a few more drops of the saline solution. Don't add too much extra saline as the consistency gets less sticky as you knead it. Adding too much saline solution can result in an over-activated slime with a rubbery texture.

Once you get the mixture thoroughly whipped and incorporated, you can pull it out with your hands and knead.
TIP: Before removing the slime from the bowl, squirt a few drops of saline solution on your hands.
THE SCIENCE:
Slime is a non-Newtonian fluid, which means it is neither a liquid nor a solid, but can be a bit of both!
Making slime involves chemistry! The glue in slime is made of long chains of molecules called polymers. These usually flow past each other, which keeps it liquid. But when you add saline solution, the borate ions in it start to connect the long polymer strands together. As they tangle and mix, they become thicker and rubberier—slime!