**Magnetic slime**

**REMEMBER BEFORE YOU START TO**

1. Label Laboratory Notebook with the title of experiment & date you perform it
2. Gather all your materials
3. Read the **CAUTIONS**
4. Read ALL Methods
5. Write **predictions** in your Laboratory Notebook
6. Wear your goggles, gloves, and lab coat

**GOAL:** Learn about adhesion & Magnetism

**MATERIALS**
- Liquid Starch
- Elmer’s Glue
- Iron Oxide Powder
- Mixing bowl
- Plastic spoon
- ¼ cup measuring cup
- Tablespoon
- Neodymium – rare Earth magnet

**CAUTION**
- Neodymium magnets are extremely strong. Slide magnets apart or fingers can get pinched.
- Keep magnets away from cellphones, computers, and other electronics!

**METHODS**

1. Pour 1/4 cup of white PVA glue into your mixing bowl. You may have to use the spoon to scrape all the glue out of the measuring cup.
2. Add 2 Tablespoons of iron oxide powder. Stir well. Mixture will look like Oreo cookie crumbs
3. Pour in 1/8 cup of liquid starch. What do you think will happen when you mix in the starch? Write your **predictions** in your laboratory notebook.
4. Stir the glue and starch mixture really well to make sure that it’s all mixed. As soon as you begin to stir, the starch will react with the glue and the slime will start to form. Write your **observations** in your laboratory notebook.
5. Knead the slime with your hands.
6. Wash your hands
7. Play! Place the rare Earth magnet next to slime. **What do you think will happen?** Write & draw your observations in your laboratory notebook.
**What’s happening?**

The iron oxide powder in the slime is attracted to the magnet. Iron is one of three elements that is magnetic at room temperature. The other two elements that are magnetic at room temperature are cobalt and nickel. The mixture of school glue with borax creates the slimy substance that holds the iron. What prevents the iron filings from flying out of the slime and to the magnet? The slime is able to hold on to the iron filings by adhesion. Adhesion is the force that holds molecules of different substances together. The slime is also bonded together by cohesion, the force that holds molecules of the same substance together. This combination of magnetism, adhesion, and cohesion results in the stretchy, moving slime when a neodymium magnet is held near the mixture.

**Who Uses This in Real Life?**

**Physicists** study matter and the forces (pushes or pulls) that act on it. (Matter is what makes up all physical objects). The force of magnets, called magnetism, is a basic force of nature, like electricity and gravity. Magnetism works over a distance. This means that a magnet does not have to be touching an object to pull it.

Esther Conwell was a physicist and chemist known for her pioneering semiconductor science. Her research investigating the fundamental properties of semiconductors and conducting polymers paved the way for modern computing and silicone microchips.

Joan Berkowitz is a chemist and environmental consultant. She uses her command of chemistry to help solve problems with pollution and industrial waste.

**Chemical Engineers** combine natural sciences and life sciences together with mathematics and economics to produce, transform, and properly use chemicals, materials, and energy. They also design processes and equipment for large-scale safe