

# **Fashion Chromatography**

Use a common chemistry practice to apply a custom design to fabric. Jazz up a white scarf, t-shirt or bandana and wow your friends with your knowledge of chemical chromatography!

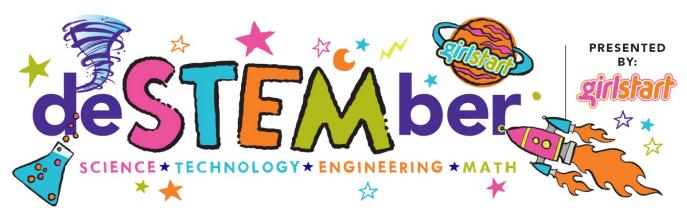
#### TEKS:

- 2.5C Demonstrate that things can be done to materials to change their physical properties, such as cutting, folding, sanding, and melting.
- 3.5D Explore and recognize that a mixture is created when two materials are combined, such as gravel and sand or metal and plastic paper clips.
- 5.5D(ss) Identify changes that can occur in the physical properties of the ingredients of solutions, such as dissolving salt in water or adding lemon juice to water.

### **Materials:**

- Isopropyl alcohol (90% or higher)
- Small medicine dropper or disposable pipettes
- Shallow container made of rigid material (e.g. cup, beaker or dish)
- Rubber bands
- White fabric: cotton t-shirt, bandana or scarf, washed & dried (do not use fabric
- Permanent markers, various colors (dark and/or bright colors work best)
- Safety glasses





#### **How To:**

- 1. Pre-wash and dry fabric or t-shirt. Do not use fabric softener or dryer sheets.
- 2. Locate a container of your choice (cup, beaker, shallow container of any sort) and place on the inside or underside of the fabric. Flatten a section of the fabric over the opening of the container. Place a rubber band over the fabric section and the container.
- 3. Using one or more permanent markers, draw a small design of your choice (e.g. dots, shapes). The design should be no larger than ¼" to ½" inch diameter and should be drawn in the center of the rubber-banded section.
- 4. Place several drops of isopropyl alcohol in the center of the design using the pipette or dropper. Observe as the alcohol flows onto the fabric and the marker inks spreads.
- 5. After a few seconds you may add more alcohol, if desired, to spread the pattern further.
- 6. Allow to dry and move to a new section of the fabric to decorate as desired.
- 7. When all fabric sections are completely dry, place fabric in a dryer on high for 15 to 20 minutes to set the colors.

## Why Does It Work?

Chromatography is a process used to separate the parts of a mixture.

"Think of chromatography as a race and you'll find it's much simpler than it sounds. Waiting on the starting line, you've got a mixture of chemicals in some unidentified liquid or gas, just like a load of runners all mixed up and bunched together. When a race starts, runners soon spread out because they have different abilities. In exactly the same way, chemicals in something like a moving liquid mixture spread out because they travel at different speeds over a stationary solid." --explainthisstuff.com ...continue reading about chromatography

#### **Career Connection:**

**Forensic Science**: Forensic scientists use chromatography to separate the components of samples taken from crime scenes. Read more about "Separation Science" used by the FBI

here: http://www.propertiesofmatter.si.edu/fbiscience.html

Additional Resources: National Defense Education Program - Lab TV - Color

Writing http://www.ndep.us/Color-Writing

