

Chromatography Shamrocks

The Goal

To use water to "pull" the ink from a green marker across a coffee filter, separating the blue and yellow dyes that were mixed together to make the green color.

Materials Needed

- White coffee filters (these work like special scientist paper!)
- Green washable markers (not permanent!)
- Scissors
- A shallow cup or bowl of water
- Pencil (optional, for tracing)



The Step-by-Step Process

1. **Trace and Cut:** Lay a coffee filter flat. Gently trace a large shamrock shape onto it using a pencil. Then, carefully cut out your paper shamrock.
2. **Color the Center:** Draw a thick green circle or dot right in the middle of your shamrock using the washable green marker. Don't fill in the whole thing, just a good-sized spot in the center.
3. **Setup:** Place your paper shamrock on a flat surface. Dip just the very bottom tip or stem of the shamrock into the water, making sure the green marker spot stays above the water level. The water will start to climb up the paper through capillary action.
4. **Watch the Magic:** As the water travels, it will hit the green ink. Instead of just making a big green smudge, the water will "carry" the different parts of the ink along with it at different speeds. You'll see the ink begin to separate.
5. **The Science:** Different dye colors have different sized molecules. Some are light and travel fast with the water, while others are heavier and move more slowly.
6. **The Result:** Soon, you'll see rings or streaks of blue and yellow branching out from the original green spot! The green marker was actually a mixture of these two primary colors all along.
7. **Dry and Display:** Once the water has spread the colors throughout your shamrock, carefully lay it flat on a paper towel to dry. Now you have a unique, scientifically-separated St. Patrick's Day decoration!