



## Kitchen Science

# Autumn Leaf Chromatography

Chromatography is the science of separating mixtures. In this simple experiment, reveal the hidden pigments that make up colorful fall leaves.

**This experiment requires adult supervision.**

### What you need:

- Fall leaves, assorted colors (several of each color)
- Small glasses or jars (like jelly or baby food jars)
- Covers for jars, can be aluminum foil or plastic wrap
- Rubbing alcohol\*
- Paper coffee filters
- Shallow pan, or bowl
- Hot tap water
- Wooden skewer/toothpick
- Spoon, or other utensil for grinding leaves

*\* Please handle rubbing alcohol carefully and read the bottle label for any warnings.*



### What you do:

1. Gather an assortment of leaves in different colors. Try to collect several leaves of each color, preferably from around the same tree. Tear or cut the leaves into very small pieces and put them into small jars according to color. Use the back of a spoon or other utensil to further grind up the leaves.
  - If you identify the type of leaves, label the jars with the name and/or the location the leaves were gathered.
2. Carefully add enough rubbing alcohol to each jar to cover the leaves.



3. Cover the jars very loosely with plastic wrap or aluminum foil. Place the jars carefully into a shallow tray containing about 1 inch of hot tap water.

4. Keep the jars in the water for at least a half-hour, longer if needed, until the alcohol has become colored (the darker the better). Twirl each jar gently every so often.

5. Cut a long thin strip of coffee filter paper for each of the jars.

- These can also be labeled, like the jars.

6. Remove jars from water and uncover. Place a strip of filter paper into each jar so that one end is just in the alcohol. Try a set-up like one pictured below:



7. Let the filter sit in the leaf and alcohol solution for 30-90 minutes (or longer). What do you notice as the alcohol spreads up the coffee filter? Over time, you should start to see different shades of yellow, orange, red, or green, depending on the type of leaf.

8. Remove the strips of paper, let them dry and then tape them to a piece of plain paper.

The following pigments help leaves absorb sunlight necessary for photosynthesis, and also give leaves their color:

- Chlorophyll - green
- Anthocyanins - red/purple
- Carotenoids - orange
- Xanthophyll - yellow