

The Science of Chromatography

Do you know.....



What is Chromatography?

- Chromatography is one way in which mixtures can be separated.
- Chromatography relies on two states of matter to separate a mixture:

* A Solid

* A Liquid



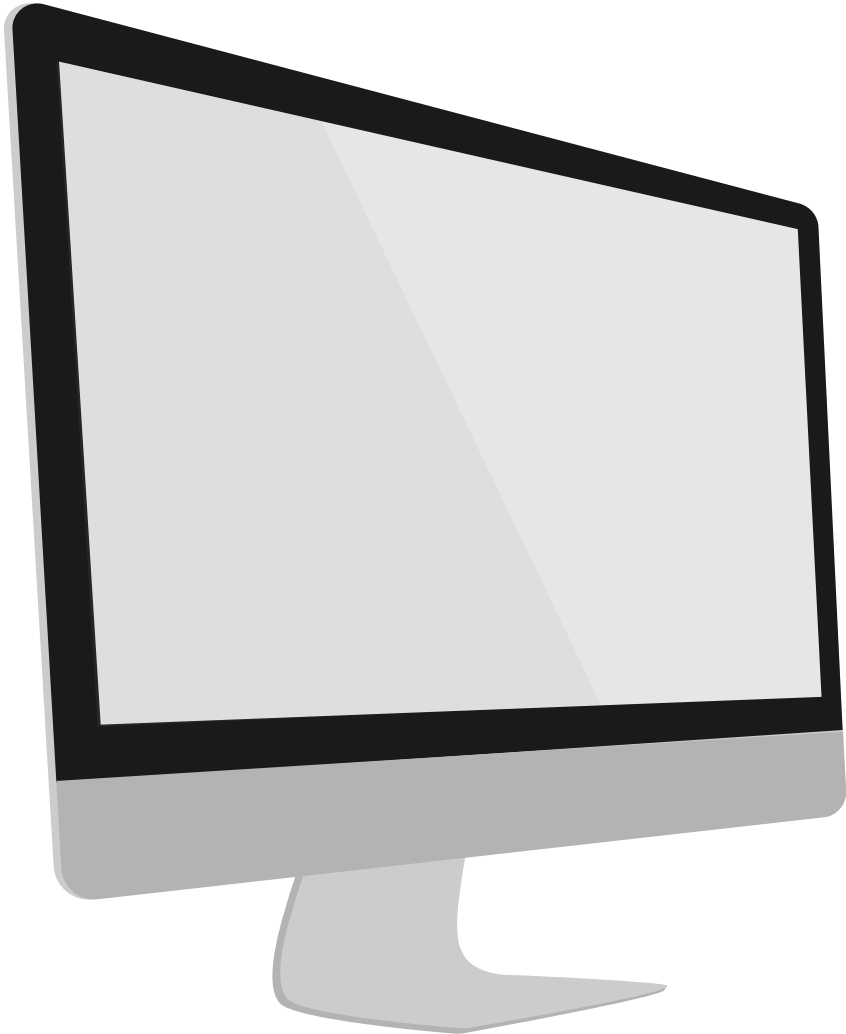
Chromatography



Matter exists in three states:

- Solid (Example: Wood)
- Liquid (Example: Gasoline)
- Gas (Example: Air)

Most of the matter around us consists of a mixture of pure substances. Oxygen is an example of a pure substance. Gasoline, air, and wood are examples of mixtures.



Science

Technology

Engineering

Mathematics

Experiment






Using chromatography is one way to separate mixtures into pure substances.



In our experiment, we will be using a liquid (isopropyl alcohol) and a solid (mask) to separate ink, a mixture whose different parts are hard to see.

How will it work?

-  Different parts of the mixture in the markers will have different attractions for the alcohol and for the fabric.
-  The parts of the ink that are attracted to the alcohol will move along the fabric as the alcohol does.
-  Other parts of the ink will be more attracted to the fabric and will not move across the fabric.



Materials Needed for Experiment

Cotton White Mask



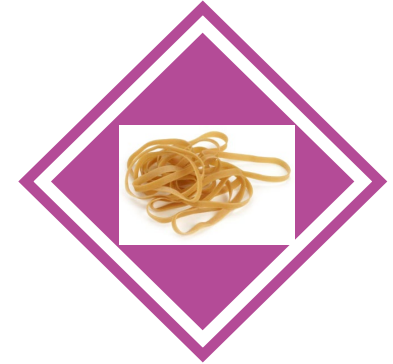
Crayola Permanent Markers



Eye Droppers



Rubber Bands



91% Isopropyl Alcohol



Beakers/Cup



Safety Equipment

- ★ Safety Glasses
- ★ Latex Gloves



Directions



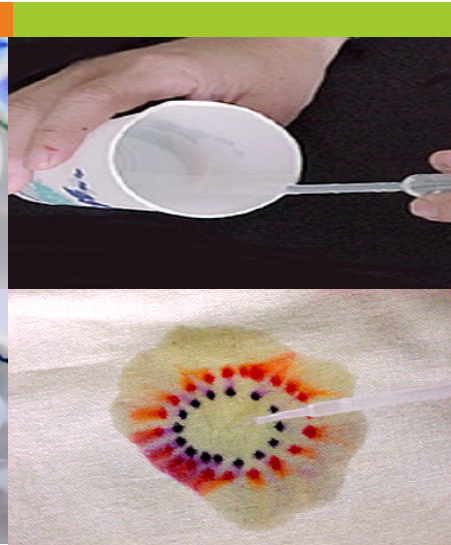
Put on Safety Glasses and Latex Gloves.



Take a section of the mask/shirt and place over beaker/cup using a rubber band to hold tautly.



Make a design with markers. Designs like dots and spirals work best.



Place a drop of alcohol onto design.



Experiment with different designs and placement of alcohol. When done, allow mask/shirt to air dry completely.



Uses for Liquid N₂



General Dynamics Marion uses LN₂ to remove Oxygen from pressure vessels called [Autoclaves](#). LN₂ expands 694 times at room temperature. We use about 14,000 gallons per week. LN₂ cost about 50¢ / gallon.



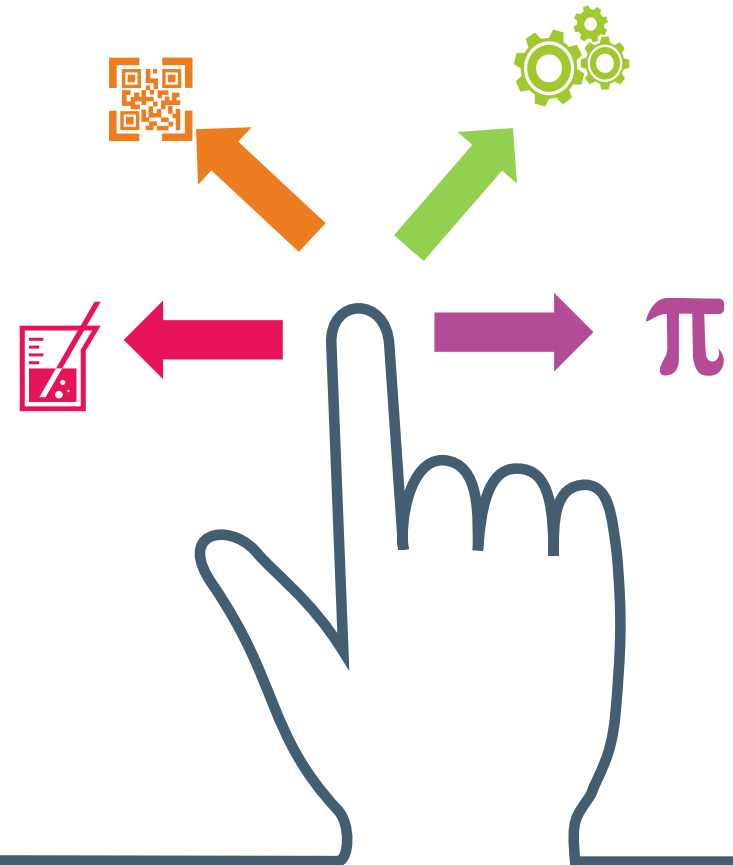
Medicine, freeze warts



Electronics, superconductors and computers



Food, for making Ice Cream, **Dippin Dots**



GENERAL DYNAMICS

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