Reagents and equipment

- 150mL (2/3 cup) vegetable oil;
- liquid food colorings;
- glass (for oil & food color);
- glass container (for water + oil mixture);
- 500mL (2 cups) cold water;
- wooden stick.

Step-by-step instructions

Pour the vegetable oil into a glass and add some food coloring. Stir vigorously with a wooden stick. Then pour the oil and dyes in a glass container filled with cold water. Give it some time…

Process description

Since liquid food colorings are aqueous solutions, the colored droplets pass freely through the oil layer. But why exactly does this happen? The molecular properties of oil and water prevent them from mixing. Water consists of polarized molecules, i.e. each of its molecules has a positive charge on one side and a negative charge on the other. As opposites attract, the water molecules are attracted to each other. The oil molecules are nonpolar, so they don't attract water molecules and therefore don't mix with them. When stirred, the large drops of food coloring break up into smaller drops and "freeze" in the oil, forming an emulsion. Food coloring is denser than vegetable oil, so when the emulsion is introduced to a body of water, the drops gradually trickle down to the oil-water border. When the drops reach the water, the colorful storm begins.

Safety precautions

- Conduct this experiment only under adult supervision.
- Caution, colorants may leave marks on the skin and surfaces.