

## Colorful Milk

**Purpose:** To demonstrate how molecules move when charged and uncharged polar ends bind to one another.

### Materials

- Milk
- Small foil aluminum pie pans (one for each child)
- Food coloring in a variety of colors
- Liquid dishwashing detergent
- Small containers for the dishwashing detergent (each child will need a container)
- Eyedroppers

### Procedure

- 1) Pour enough milk into each pie pan to cover the bottom. It does not have to be deep.
- 2) Instruct the children to add 2 drops of each food coloring to the milk. Make sure to tell them to space the drops all around the surface of the pie pan.
- 3) Hold the detergent over the center of the saucer and using an eyedropper, squeeze one drop of detergent into the pie pan.
- 4) Observe what happens to the colors.

### Results

The food colors begin to swirl in different patterns across the surface of the milk. They do not mix with each other.

### Why?

The explanation for the swirling food colors has to do with the fact that the surface tension of the milk was changed when the dishwashing detergent was added. The molecules in the detergent have both a charged and uncharged polar end, as do the molecules in the water. When mixed together, the detergent molecules bind to the water molecules and the result is a swirling of color.