



# High Touch High Tech®

Science Experiences That Come To You

## Biofuels Bottle

### Ingredients & Supplies:

- 6 oz. or 8 oz. plastic bottle with lid
- Corn/ Vegetable oil
- Assorted food coloring
- Water
- Funnel

### Instructions:

For this experiment, find a clear plastic bottle and cap. Pour corn/vegetable oil into your bottle. (Fill the bottle halfway.) Carefully observe the oil.

Next, squeeze a few drops of food coloring into your oil. Notice that the food color stays in little “balls.” Try to count how many balls of color are in your bottle. Now put your bottle cap on very tight. After you check to make sure the cap is on tight, shake the bottle!

Observe your bottle. What happened? The balls of food color became smaller, and there are so many more. What is going on? The food color balls collided with each other and became smaller. With each collision there is a release of energy and the food color balls seem to multiply. In a real chemical reaction, the collision of molecules would release a significant amount of energy - enough energy to propel a car/airplane forward!

Now that you collided the molecules, carefully pour water into your bottle. Try to keep your bottle steady so that the collided molecules will all stay in the oil layer. Watch what happens! The Oil layer and the water layer will switch places.

Notice how some of the water is turning the color of the food coloring. The food color molecules want to live in the water layer. Don't forget these colored molecules are going to transfer from the oil phase to the water phase. The food color molecules will feel so at home in the water that they will just spread out!

In this experiment, you investigated a type of energy production. Great job!



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## Real World Relevance - Biotechnology

Biotechnology is the application of principles of Biology for useful purposes. Biotechnology includes the use of DNA for genetic engineering. This is when scientists can change the genetic structure of an organism. Biotechnology also includes the production of certain types of food. Any useful application of Biology is Biotechnology.

Biotechnology was also used in Ancient times. Various methods of food preservation allow humans to save a desired food for later use. Grapes rot and turn to compost, milk is fresh for only a few hours without proper refrigeration, and raw flour is useless to humans. Using the fermentation technology and genetic engineering, scientists have discovered different methods of Biotechnology to preserve food.

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