

# Chemical Reactions

Running Time: 26 Minutes

## Nifty questions in this episode:

- How are new chemicals formed?
- When iron reacts with oxygen, what occurs and what is given off?
- How do our cars run on chemical reactions?

## Awesome answers:

- New chemicals are formed when two old chemicals react with each other.
- When iron reacts with oxygen, a chemical reaction occurs and energy is given off.
- Our cars run because gasoline reacts with the oxygen in the air to cause millions of little explosions inside the engine. These explosions cause the engine's parts to move, driving the car.

## Experiments shown on the video:

### A PENNY FOR YOUR THOUGHTS

**Objective:** To observe a chemical reaction.

- Get a juice or jam jar and put seven to ten pennies (dirty or old ones are best) inside.
- Pour 50 milliliters of vinegar into the jar.
- Add a tablespoon of salt to the vinegar.
- Put the lid on the jar and shake the solution; the pennies will move around.
- The copper on the pennies will be stripped away. Can you explain why?

## More interesting stuff to do:

### GETTING IT TOGETHER

**Objective:** To create an emulsion.

- Pour 300 milliliters of oil and 100 milliliters of vinegar into a jar.
- Place the lid on the jar and shake it.
- Allow the jar to stand until the oil and vinegar separate.
- Add an egg white and shake the jar again.
- With the egg white added, the oil and vinegar will mix (in suspension) to make mayonnaise.

### RISING TO THE TASK

**Objective:** To test for carbon dioxide gas that is released when bread rises.

- Place pieces of yeast cake into a 500-milliliter flask.
- Add a tablespoon of sugar and one-third cup of water; stir until smooth.
- Place a one-hole stopper on top of the flask.
- Insert a 5-centimeter piece of glass tubing or drinking straw that fits into the stopper, leaving 3 centimeters sticking out.
- Connect a length of rubber tubing purchased at a hardware store to the glass tubing/straw.
- Place the other end of the rubber tubing into a 600-milliliter beaker.
- Pour 300 milliliters of lime water (available at a grocery or science supply store) into the beaker.
- The carbon dioxide gas being released is what causes bread to rise. Observe as the carbon dioxide gas turns the clear lime water into a milky solution.

Way Cool Scientist: Phil Grucci, Pyrotechnician



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