



Activity: Hydrogen Production by Electrolysis

Elementary level: 8-10 yrs old

Goal of experiment

Use electrolysis to decompose water into hydrogen and oxygen. Begin to understand the impact of clean energy and the power produced from combining water and electricity. Understand the fundamentals of fuel cells.

Items needed for the experiment (per group):

1. Water (distilled or from tap)
2. Battery / set of batteries (4,5 V or 6 V)
3. Aluminum foil
4. Test leads with alligator clips at both ends
5. Salt
6. Clear plastic (or glass) cup

Instructions for the experiment:

1. Make two electrodes out of the aluminum foil (should be very close in size)
2. Fill cup $\frac{3}{4}$ full of water
3. Attach one test lead from the positive (+) terminal of the battery to an electrode and attach the second test lead to the negative (-) terminal of the battery and the second electrode.
4. Place the electrodes in the water bath without allowing them to touch.
5. Observe
6. Add some (one tea spoon) of salt to water
7. Observe



Electrolysis - worksheet

Name _____

Hypothesis:

1. What will happen when we place the electrodes attached to the battery into the water bath?
2. Why is it important not to allow the electrodes to touch each other?
3. What will happen when we add salt to the water bath?

Observations:

1. What do you see on each electrode? Is it the same on both electrodes? What is the difference?
2. What difference did adding salt make?
3. The chemical formula of water is H_2O : it means that water is composed of hydrogen (a light gas that burns) and of oxygen (a gas needed for breathing and burning). Hydrogen is twice as much as oxygen.

Which electrode (positive or negative) is producing oxygen? And which is producing hydrogen? How can you tell?

4. Complete the reaction: $\text{H}_2\text{O} \rightarrow \dots + \dots$

Conclusions:

1. How could we trap the gas being produced at the electrodes?
2. What applications would this trapped gas be useful for?