

Electrolysis of Water

Summary

Students will use the electrolysis of water to understand how a compound is named and how the physical and chemical properties of the elements in a compound can be quite different from the compound itself.

Time Frame

1 class periods of 70 minutes each

Group Size

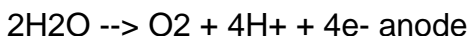
Pairs

Materials

- [student sheet](#)
(attached)
- water
- two test tubes
- 400 mL beaker
- electrodes (purchased or use two pencils sharpened at both ends)
- sodium hydroxide
- sodium carbonate
- dilute sulfuric acid
- Phenolphthalein (optional)

Background for Teachers

Electrolysis is a process by which a chemical reaction is carried out by means of the passage of an electric current. In the electrolysis of water, water is oxidized at the anode (negative) and reduced at the cathode (positive).



The cathode will be recognized by a pink color from the phenolphthalein indicator due to hydroxide production. Phenolphthalein turns pink in the presence of base and clear in the presence of acid. Both electrodes will produce bubbles; however, the cathode will be recognized due to the greater production of gas. Two molecules of hydrogen are produced for every molecule of oxygen produced. The gases produced at the electrodes can also be collected and tested. A positive test for the presence of hydrogen is a soft pop sound when a burning match is placed in the mouth of the container. The test for the presence of oxygen is to place a smoldering match in the mouth of the container. If the match glows oxygen is present.

Instructional Procedures

All procedures are listed on the student's worksheet.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)