



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> LeCheng Tong	<b>Project Number</b> <b>J0527</b>
<b>Project Title</b> <b>Taking Apart Water</b>	
<b>Objectives/Goals</b> My project was to determine if it is possible to achieve a 2:1 volume ratio of hydrogen to oxygen during an electrolysis process. I believe that it is possible because a water molecule consists of two atoms of hydrogen and one atom of oxygen.	
<b>Abstract</b> An electrolysis device was set up, consisting of two carbon rods, two long insulated wires, two graduated test tubes, a 1.8 liter large bowl filled with purified water, and an AC to DC transformer. Three types of electrolytes, table salt (sodium chloride), baking soda (sodium bicarbonate), and soda ash (sodium carbonate), were used. As the gas volume increased in the test tubes, measurements were taken at certain intervals of time. At the end of the experiment, the gas in each tube was ignited using a lit candle to determine the type of gas.	
<b>Methods/Materials</b> An electrolysis device was set up, consisting of two carbon rods, two long insulated wires, two graduated test tubes, a 1.8 liter large bowl filled with purified water, and an AC to DC transformer. Three types of electrolytes, table salt (sodium chloride), baking soda (sodium bicarbonate), and soda ash (sodium carbonate), were used. As the gas volume increased in the test tubes, measurements were taken at certain intervals of time. At the end of the experiment, the gas in each tube was ignited using a lit candle to determine the type of gas.	
<b>Results</b> Electrolysis using soda ash did achieve a 2:1 volume ratio of hydrogen to oxygen. However, the experiment with baking soda could only generate a 1.6:1 ratio at the most while the experiment with salt ended up with a ratio as far off as 170:1.	
<b>Conclusions/Discussion</b> I proved my hypothesis right; it is possible to achieve a 2:1 volume ratio of hydrogen to oxygen under certain circumstances. The electrolyte, in this experiment, had to be sodium carbonate.	
<b>Summary Statement</b> My project is about the electrolysis of water.	
<b>Help Received</b> Dad helped set up experiment; mom helped tape board.	