



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

<b>Name(s)</b> Seungjune Lee	<b>Project Number</b> <b>J0619</b>
<b>Project Title</b> <b>Effects of Temperature on Speed of Electrolysis of Water to Hydrogen Gas and Oxygen Gas</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My objective was to determine how does temperature of water affect speed of electrolysis of water to hydrogen gas and oxygen gas. <b>Methods/Materials</b> Mass of water disappeared from 100 grams of water and 2 grams of potassium nitrate at 25°C after 5 minutes of electrolysis. Then, mass of water evaporated from 100 grams of water and 2 grams of potassium nitrate at 25 degrees Celsius after 5 minutes without electrolysis. Lastly, mass of water evaporated was subtracted from mass of water disappeared after electrolysis in order to calculate mass of water turned into hydrogen gas and oxygen gas due to electrolysis. Identical experiment was conducted for water temperature of 35, 45, 55, and 65 degrees Celsius. And whole sequence was repeated 4 times more. <b>Results</b> The average mass of water turned into hydrogen gas and oxygen gas for temperatures 25, 35, 45, 55, and 65 degrees Celsius was 0.20g, 0.42g, 0.66g, 1.34g, and 2.04g. For every single trial, the mass of water turned into hydrogen gas and oxygen gas after 5 minutes of electrolysis was greater when the temperature of the water was higher. <b>Conclusions/Discussion</b> A conclusion can be drawn from results from my experiment that the higher the temperature of water is, the faster the speed of electrolysis is. This information about general relationship between temperature and electrolysis provides more efficient way to use electrolysis than before in various areas.	
<b>Summary Statement</b> This project determines the relationship between temperature and electrolysis.	
<b>Help Received</b> My science teacher, Mrs. Martin, provided me potassium nitrate and equipments. And my dad bought me all materials.	