



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Eunice Lai</b>	<b>Project Number</b> <b>J0609</b>
<b>Project Title</b> <b>Temperature, Acids, and Rusting Rates: Which Is More Prevalent?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this experiment is to test the effect of temperature on the rusting rate of steel and iron, versus the effect of acid on the rusting rate of these two metals. <b>Methods/Materials</b> The steel nails and iron bolts were weighed before and after the temperature and acid trials, with the rusting rate being calculated by the percent differences of the before and after weights. Three different temperatures were tested, along with two different acids, citric and acetic. <b>Results</b> The hypothesis was that the effect of temperature on the rusting rate would be at least 95% higher than the effect of the acid. The results proved that half of the hypothesis was wrong, for the part that states that the effect of temperature on the rusting rate would be at least 95% higher than the effect of the acid was off; for example, in the sample I+A, Ht, the percentage loss was 2.82, while in sample I+A, Rm, the percentage loss was 0.17. This compares iron in acetic acid, but in different temperatures. <b>Conclusions/Discussion</b> Some patterns that were seen in the results of the experiment were that in all the trials, the iron samples that were in the control group that were put in the cold condition had the same percentage loss as the iron samples in the control group but in the room temperature condition.	
<b>Summary Statement</b> This experiment tested the rusting rate differentiation when steel and iron was subject to temperature changes versus being submerged in acid.	
<b>Help Received</b> Parents helped to buy supplies; used lab equipment at SDSU under the supervision of Dr. Chun-Ta Lai	