



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Gian E. Sonza	Project Number S0516
Project Title Metal-morphosis	
Objectives/Goals I chose to do this science experiment to determine how different metals react with hydrochloric acid. I hypothesized that Aluminum will be the most reactive metal tested, followed by zinc, iron, then copper. My hypothesis is based on the Periodic Table of Elements and the Reactivity Series. Metals are placed according to properties on the Periodic Table of Elements. I used test tubes to hold the metals while they were being tested with hydrochloric acid. Ring stands were used to hold the test tubes upright in a steady position. When each metal was each placed in its individual test tube, I poured a sufficient amount of hydrochloric acid to cover the metal. Immediately after I poured hydrochloric acid into the test tubes, I covered each test tube with a different color balloon. A balloon was placed on the rim of each test tube to determine which metal was most reactive. The more a balloon was inflated, the more hydrogen was released. I then watched the experiment carefully, and charted results. Photographs were taken before, during, and after the process of testing the activities of metals. After different trials of testing the reactivity of each metal, I began too see different outcomes and results with each metal. It soon became obvious that there was a relationship between the way the Periodic Table of Elements is grouped together and my results. All of my results were logged and charted. After all of the experimentation was finished, all of the metals, and pertinent equipment were saved for display.	
Abstract Conclusions/Discussion After performing the exhibition trial to this science experiment, I decided that I needed to try to estimate the same surface area for the metals. That is why I needed to place two aluminum tacks, two copper tacks, and two zinc nails to approximately equal the surface area of one iron nail. Then after performing this science experiment a number of times, I determined that my hypothesis was semi-correct; that Aluminum is the most active metal being tested, followed by zinc, iron, and then copper. Aluminum took first place every test. The results between iron and zinc would fluctuate. Copper did not react to the hydrochloric acid at all. All of these changes in results were due to the fact that I did not have a more exact method of measuring which metal gave off the most hydrogen.	
Summary Statement The object was to determine which metal (iron, copper, zinc, aluminum) reacted with Hydrochloric Acid to displace hydrogen.	
Help Received Teacher helped supervise experiment	