



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Jonathan Barber; Allen Brookshire	Project Number S0502
Project Title The Purification Process of Metallurgy	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The basis of this experiment was to alter the properties and structure of natural occurring metals by heating and extracting impurities.</p> <p>Methods/Materials In order to perform this experiment it was necessary to use a heat source significant for melting the metals lead, tin, aluminum, zinc, copper, nickel, and iron. Finding the densities will require graduated cylinders, scales, bunsen burner, crucibles, an oxyacetylene torch and proper safety equipment. Density of each unmelted metal was taken by using a water displacement test in the graduated cylinder. A sample of each metal was melted using a heat source. If possible up to three trials were completed on each metal. Impurities were brushed off and the metal was then cooled to room temperature. The densities of each metal were taken again by using the water displacement test. All data was recorded and densities were compared.</p> <p>Results According to the data Zinc had the most impurities and Bismuth had the lowest amount of impurities. In melting the metals it was found that they all changed in density. All metals except copper and nickel increased in density after being melted.</p> <p>Conclusions/Discussion A bunsen burner of constant temperature made for equal conditions of metals. All of the samples dropped in volume at different proportions. Using an oxy-acetylene torch for some of the metals requiring excess heat had oxidized and caused a decrease in density in nickel and copper. This experiment successfully increased the densities of most of the metals and cleared out a majority of the impurities.</p>	
Summary Statement The project was to test the effect of melting on metal densities.	
Help Received Used classroom equipment at C.V.H.S. under supervision of Mrs. Poquette	