



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Christopher L. Sercel	Project Number 31916
Project Title How to Make Your Household Carbon Arc Run Longer	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective is to determine the relative effect of oxidation on the electrode corrosion in a carbon arc.</p> <p>Methods/Materials Two 50 ohm space heaters were wired in parallel to use as a resistor. Three types of tests were used: helium (to eliminate oxygen), standard atmosphere, and pumping fresh air through the arc. A T-shaped quartz tube was used to flow gas through the arc, with the rods coming in two ends and gas through the third. The run time of the arc was measured as a measure of corrosion. The more corrosion, the wider the gap between the rods, so it terminates automatically eventually.</p> <p>Results The tests with fresh air pumped in lasted the shortest, with tests about 20 seconds, standard atmosphere was in the middle with tests about 45 seconds, and helium lasted the longest with tests around 400 seconds and one test at 665 seconds.</p> <p>Conclusions/Discussion This demonstrates that oxygen has a large effect on the corrosion of a carbon arc. In addition, the sound of the tests with oxygen was greater than the helium tests, and the corrosion is different visually.</p>	
Summary Statement Determining the effect of oxidation on the corrosion of a carbon arc.	
Help Received Mother helped proofread report; Father helped by offering advice and ordering the quartz.	