



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Alexander J. Crawford-Kuhrts	Project Number S1503
Project Title Testing Tesla	
Abstract Objectives/Goals Originally my objective was to discover the difference in how electricity flows in open air and in a vacuum. However, I have expanded my objective after the Mendocino County Science Fair in order to test how electricity will flow in other atmospheres rather than just open air and inside a vacuum. My current objective is to discover how electricity will flow through different atmospheres including: open air, an empty vacuum, one filled with helium, and one filled with argon. Methods/Materials Tesla coil; 4 6-volt batteries (lantern batteries); Solid core hookup wire; Knife switch with screw connectors; 12-volt relay switch with soldering connectors; Wells 12 volt automotive ignition coil; Soldering wire; Soldering tools; Alligator clips; Mounting board; Vacuum tube; 6 in long by 3 in diameter clear plastic tube; Vacuum pump; Copper tubing; Various sealing valves; Argon; Helium. Results Electricity changes color in different atmospheres, and flows much farther in a vacuum than it does in open air. Results for how electricity flows in helium and argon are still pending and will be available by the State Science Fair. Conclusions/Discussion I concluded that electricity flows much farther in a vacuum than in open air (which disproved my hypothesis) due to the lack of molecules that restrict electric flow. In open air there are so many more molecules, they restrict the flow of electricity, thus electricity cannot flow as far. At the county competition, judges recommended that various gases should also be tested in the vacuum chamber, so I decided to test helium and argon because they are more available.	
Summary Statement Using a tesla coil to test electrical flow in open air, in an empty vacuum chamber, and one filled with Helium & Argon gases.	
Help Received Paul Gilbert - Biology teacher, Mother & friend Karen Soberanis helped with board design and layout, Don Sinclair helped with electrical, vacuum chamber and gases.	