



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

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<b>Project Title</b> Solar Shock	
<b>Objectives/Goals</b> Goal-create a solar-related energy source which can power any type of electronic using no advanced equipment <b>Abstract</b> <b>Methods/Materials</b> -A sheet of Copper Flashing. -Alligator Clip Leads. -A sensitive micro-ammeter that can read currents between 10 and 50 microamperes. -An electric stove. -A large clear spring water bottle. -A couple teaspoons of table salt. -Sand paper. -Tap water. -Sheet metal shears for cutting the copper sheet. <b>METHOD:-</b> - I cut a piece of copper sheeting about the size of stove - I washed my hands so they don't have any grease on them and then I wash the copper sheet with soap to get rid of oil or grease off of it. -I use the sandpaper to clean the copper sheeting so any sulphide or light corrosion is removed. -I cooked the 1 copper sheet on gas stove for half an hour till I got the blackcoating of cupric oxide. - I noticed as the copper cools, it shrinks. The black cupric oxide also shrink @ different rates which make black cupric oxide flake off. -I took a spring water bottle in that i put 2 pieces of copper sheets with the help of alligator clips, 1 was heated and other was not. - I attached the other corners of the alligator clips into the ampmeter. - I pour the saltwater into the bottle and I was very careful so that the water won't touch the alligator clip. - I took my project to sun than i turned the ampmeter ON to the RX10 and i noticed the needle jumped go to 50 amp. - I tried the same procedure in cool and dark place needle jumped but it was just on 20 amp. <b>Results</b> Yes it worked.Why? Cuprous oxide is a type of material called a semiconductor.Its in between a conductor, where electricity can flow freely.In a semiconductor, there is a gap, called a bandgap between the electrons that are bound tightly to the atom, and the electrons that are farther from the atom, which can move freely and conduct electricity.Electrons cannot stay inside the bandgap.An electron must gain enough energy to move farther away from the nucleus, outside of the bandgap.When sunlight hits the electrons in the cuprous oxide, some of the electrons gain enough energy from the sunlight to jump past the bandgap and become free to conduct electricity.The free electrons move into the saltwater, then into the clean copper plate, into the	
<b>Summary Statement</b> Solar Energy	
<b>Help Received</b> Books, library, Mom	