



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Daniel Kazarian	Project Number <div>35043</div>
Project Title Can Crystal Power Cells Outlast Alkaline Batteries?	
<div><div>Objectives/Goals To determine if crystal power cells can outlast alkaline batteries.</div><div>Methods/Materials Run times of AA,AAA,crystal dry cell and crystal wet cell batteries were tested and examined including voltage readings using multi-meter at certain intervals. Three flashlights were used in this experiment. Crystal power cells were constructed using copper end caps, magnesium rods, and mixture of Alum, Borax, Potassium Chloride, and Epsom Salt.</div><div>Results In terms of hours of operation, both crystal dry cells and crystal wet cells, have out performed alkaline batteries. The maximum run time of alkaline battery powered flashlights were six hours and forty five minutes, while crystal powered wet cell required only the addition of few drops of water every 24 hours, and 15 to 20 minutes to recharge itself. The crystal powered wet cell recharged itself in six hours.</div><div>Conclusions/Discussion The crystals are piezo electric and thermoelectric. They are able to produce and store energy in the presence of surrounding sound and heat. By contrast, alkaline batteries contain limited amount of stored chemical energy, and when the oxidation reduction reaction inside the battery is completed, it must be discarded. Crystal power cells batteries are ideal source of power in an emergency situations. By connecting them in series, it is possible to power emergency radio, communication devices, provide emergency lighting, etc.</div></div>	
Summary Statement Can Crystal Power Cells Outlast Alkaline Batteries?	
Help Received My Father helped me with purchasing Items need to construct crystal power cells.	