



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Kael K. Mai	Project Number J0614
Project Title Electric Fruit	
Abstract Objectives/Goals My objective is to find out which of these citrus fruits (oranges, lemons and grapefruits) will produce a consistent electrical current the longest when zinc nails and copper wire interact with the citric acid in the fruit. Methods/Materials Five fruits each of oranges, lemons and grapefruits. Zinc nails and copper wire. Voltmeters, alligator clips, and a timer. A zinc nail and a 2" copper wire piece was inserted onto opposite ends of a citrus fruit. The voltmeter was attached to the nail and wire by alligator clips (positive to copper, negative to zinc). Measurements in micro-amps were recorded in varying intervals of time, for a 12 hour period. Results The five lemons produced the strongest electrical current for the longest period of time. The five grapefruits produced the weakest current for the shortest amount of time. The five oranges fell in the middle between lemons and grapefruits. Conclusions/Discussion The citric acid in the fruits reacted with the zinc nail and copper wire, producing a current. The amount or concentration of citric acid in the fruit correlates to the strength and the length of time a current is produced, which has nothing to do with the size of the fruit. This means that lemons would produce a stronger current and for a longer amount of time due to lemons having a higher concentration of citric acid.	
Summary Statement I showed that the amount or concentration of citric acid in a fruit correlates to the strength and longevity of a current, which is produced by the reaction between citric acid, a zinc nail and copper wire.	
Help Received My parents helped with some of the recording which took over 12 hours. My science teacher helped with ideas for the science experiment.	