



## Colorado Science and Engineering Fair

## 2025 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Fruit and Veg Battery

Finalist's Name: Calvin Yang-Jacobs

School and City: Southern Hills Middle School, Boulder, CO

Sponsor's Name: Peter Laird

Category: Chemistry

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

In my experiment I made batteries out of various fruits and vegetables using Mg and Cu electrodes and Zn and Cu electrodes. My experiments revealed that the tomatoes had a higher variability than the other fruits in the amount of current and voltage that they produced. I also noticed that the boiled potatoes produced more current but less voltage than the other fruits and vegetables that I tested. I observed that when using Mg and Cu electrodes I measured a higher voltage and current than when using Zn and Cu electrodes.

I then put lemons in series and in parallel with two and three lemons and Mg and Cu and Zn and Cu electrodes. I observed that when I put the batteries in series the voltage increased. However, when I put the batteries in parallel I noticed that the current increased.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**