



Colorado Science and Engineering Fair

2024 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: Searching for a Rainbow: Quantifying Mixtures of Liquid Crystals Compounds for Visual Temperature Monitoring

Finalist's Name: William Nguyen

School and City: DSST Montview HS, Denver

Sponsor's Name: Lisa Eytel

Category: Chemistry (CHEM)

Division: Senior (9th - 12th grades)

Abstract (250 words or less):

In this experiment, the focus is on creating liquid crystals efficiently and understanding their light reflection properties. The procedure involves utilizing chemicals to form liquid crystals, with a specific emphasis on recording temperatures resulting in the crystals reflecting distinct light colors. Liquid crystals are integral to modern technology and are commonly found in devices like TVs, phones, and biomedical equipment. With six out of eight compounds yet to be tested, the research aims to develop a rapid method for creating liquid crystals and assess how it influence their light reflection. The speed of synthesis is a critical factor, particularly in technological applications. The goal is to compare the efficiency of a lab-developed method against a regulated process, evaluating the quality of crystals by analyzing the light reflections at different wavelengths and temperatures. With this research, we think we can use it for more industrial uses, such as a quick-use thermometer for telling us if a fridge is food-safe or an oven has reached a specific temperature. Using liquid crystals can help tell us what temperature something is without the use of a thermometer.

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.