



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Stephanie Reese Rillon; Emily Yan	Project Number J0614
Project Title A Sticky Situation: Corn Syrup's Angle of Polarization	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to construct a homemade polarimeter to find out if corn syrup is chiral, and if yes, what the angle and direction of polarization are.</p> <p>Methods/Materials We constructed our homemade polarimeter by using a laptop computer screen as the source of polarized light, and a polarized camera filter lens as the detector. The camera filter lens is fixed on a wood frame attached to a wood base while the laptop screen is mounted on a lazy-susan sitting on the wood base so that the laptop can be easily rotated. The liquid to be tested (corn syrup or glucose solution) is loaded into a cup with transparent glass bottom sitting on the computer screen. We first fix the lazy-susan in a desired position (i.e., perpendicular to the wood frame), and then rotate the camera filter until the computer screen (area without the test liquid) appears dark. We now fix the position of the camera filter and then rotate the lazy-susan until the light coming through the test liquid appears dark. The direction and angle of rotation of the lazy-susan give us the left-handedness or right-handedness of the test liquid and its angle of polarization. We used glucose with known direction of polarization to confirm that the homemade polarimeter operated properly.</p> <p>Results Corn syrup is left-handed and pure corn syrup we tested has an angle of polarization of 24°. The angle of polarization decreases with the dilution of the corn syrup.</p> <p>Conclusions/Discussion Our study shows that the direction and angle of polarization of a molecule can be measured effectively using a homemade polarimeter that is constructed with common household items such as laptop computer screen and camera filter tens. The angle of polarization decreases with dilution by water makes sense because water molecules are achiral.</p>	
Summary Statement We constructed a simple homemade polarimeter using a laptop computer screen as the light source and a camera filter lens as the detector and measured the direction and angle of corn syrup.	
Help Received Father helped attach the wood frame to the wood base board; Obtained glucose solution from UC Riverside	