



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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Project Title Measuring Sugar Content with an iPod Touch and 3D Glasses	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals A simple way to check the sugar content of beverages would be useful in restaurants and when buying drinks with unknown ingredients. We developed a method of using an iPod or other Smartphone and 3D movie glasses to measure the polarization rotation, and thereby the sugar content of drinks.</p> <p>Methods/Materials We bought 5 different test liquids, including three different varieties of apple juice, and regular and diet 7-Up. We produced, as calibration liquids, three types of solutions, each with a different amount of dissolved sugar. The iPod touch provided a source of linearly polarized light that was passed through the liquid. We measured the polarization rotation created by the test liquid using a pair of 3D movie glasses. We plotted a graph with our calibration liquids, and compared our test liquids to that graph to find our measure of its sugar content.</p> <p>Results We got fairly accurate results with apple juice (28 grams on label to 25 grams measured), low-calorie apple juice (14g on label to 15g measured), half strength apple juice (14g on label to 13g measured), and diet 7-Up (0g on label to 0.5g measured). However, our results were not very accurate for regular 7-Up (25g on label to 8g measured).</p> <p>Conclusions/Discussion Our results proved that it is possible to measure sugar content in various liquids using an iPod touch and 3D movie glasses. However, our procedure did not provide accurate results for the 7-Up. We think that this is because 7-Up is sweetened by high fructose corn syrup. Since fructose rotates the polarization negatively, and sucrose rotates it positively, the two sugars cancel out and give an inaccurate reading. This project gives people an easy and cheap way to test sugar content in liquids.</p>	
Summary Statement Measuring sugar content in liquids using an iPod and 3D movie glasses.	
Help Received Mother helped me look online. My dad served as an advisor, looking over data and helping with Excel.	