CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
Charles C. Robertson

Project Number
35359

Project Title
Refraction

Abstract

Objectives/Goals
My objective was to see if you can tell a solution's percentage of saturation by measuring the solution's refractive index, and to see if there was a discernible pattern in my results.

Methods/Materials
An apparatus with an acrylic, hollow prism and a fixed laser pointer was made. The apparatus was attached to a table and pointed at a wall with a scale. Then, the solution was put into the prism at intervals of 20%. The solutions were sucrose, sodium chloride, and magnesium sulfate. Then the laser was turned on, and the mark where it pointed on the wall was recorded. I did two trials per solution. The control factor was distilled water, which was the 0. A prediction about the reading of each trial was made beforehand, based on Snell's law.

Results
I found that the prediction and the actual results were far off for the sucrose and magnesium sulfate, but not that far off for the sodium chloride.

Conclusions/Discussion
My hypothesis was half correct. There was a discernible pattern in the solution's delta from 0, but it was a exponential decay function. I had predicted an exponential growth function. So there was a pattern in my results, but not the one I had predicted. So I conclude that you can tell a solution's percentage of saturation by measuring the solution's refractive index, if you know the right formula. This helps science, because it sets a foundation for further research by discovering the refractive index of these solutions.

Summary Statement
My project is about discovering a pattern in the refractive index of several solutions.

Help Received
Father helped build board and test; Mrs. Arreola helped with interview practice.