CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
S1513

Project Title
What Is the Effect of a Liquid's Temperature on Its Index of Refraction?

Abstract

Objectives/Goals
What is the effect of a liquid#s temperature on its index of refraction? This experiment attempts to answer this central question.

Methods/Materials
To test the hypothesis, a Helium-Neon Laser was shown into a liquid at varying temperatures. Using a refractometer that held the liquid, the angle of refraction was determined and then the index of refraction was computed. A plot of temperature vs. index of refraction was generated and a trendline was fit to the data. This procedure was repeated for four different liquids.

Results
For every liquid, the results showed that as the temperature increased, the index of refraction decreased. Surprisingly, the change in the index of refraction with temperature was found to be consistent for all four liquids that were tested.

Conclusions/Discussion
It was concluded that in every case the index of refraction decreased as the temperature increased. Interesting, the rate of decrease of the index of refraction was nearly identical for all four liquids.

Summary Statement
The project investigated the correlation between a liquids temperature and the index of refraction.

Help Received
Father helped conduct experiment; Used equipment provided by California State University at Long Beach.