



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Jeremy Hart; Justin Hart	Project Number J2218
Project Title Be Wise, Protect Your Eyes	
Abstract Objectives/Goals The objective of this experiment is to investigate which tint will be most effective in blocking ultraviolet rays in sunglasses. Methods/Materials We obtained two lens materials, Columbia Resin-39 and polycarbonate lens in five common tints (blue, brown, green, grey, and rose) and in two shades (light and dark). We utilized a negative control, a reference control, and a clear lens of each material as a control group. We used the Humphrey Lens Analyzer to measure the percentage of UV B and UV A transmittance. We recorded these results on our data log sheet, and calculated the UV B and UV A that was blocked by the lenses. We performed the trials twice on three different days to verify the accuracy and reliability of our results. Results All the experimental lenses blocked UV B 100%. The top three tints on CR-39 are green, grey and brown, and the darker shades did improve its' performance. In contrast, the polycarbonate lenses in light and dark tints blocked similar amounts (98-100%) of UV A. Conclusions/Discussion Our hypothesis that the grey tint would be most effective in blocking UV rays was proven incorrect. Although the light and dark green tint consistently performed exceptional in both materials, the other four tints exceeded the American National Standards Institute's recommendations. We discovered that the polycarbonate material blocked out most of the UV rays, regardless of tint or shade. The results from this science experiment demonstrated the importance of lens material in UV protection. Based on this study, we must all consider wearing sunglasses to protect our eyes.	
Summary Statement The objective of this experiment is to investigate which tint will be most effective in blocking ultraviolet rays in sunglasses.	
Help Received Tony Jaworski obtained lenses and shared his knowledge of the analyzer. Dr Dao tinted the lenses. Parents supervised & paid for materials.	