2007 TAIWAN INTERNATIONAL SCIENCE FAIR

CATEGORY : Physics

PROJECT : Polysiloxane Elastomeric Lenses as Intraocular Lenses in Cataract Extraction

AWARDS : Physics Third Award

SCHOOL : Philippine Science High School-Main Campus

FINALISTS : Angela Samantha Corazon D. Aherrera

COUNTRY : Philippines

ABSTRACT OF EXHIBIT

CATEGORY: Physics
TITLE: Polysiloxane Elastomeric Lenses as Intraocular Lenses in Cataract Extraction
NAME: Angela Samantha Corazon D. Aherrera
COUNTRY: Philippines

A polysiloxane elastomeric lens was formed by mixing a silicone elastomeric base and silicone elastomer curing agent. It was molded from a +100 glass lens attached to a milled Plexiglas mold. The changing focal length as a result of the application of different degrees and ways of applying strain was observed with the help of a diverging laser beam and 28 and 30-diopter lenses. The shortening of the focal length as a function of applied strain using weights was observed for two treatments namely low weight and high weight. The focal lengths were measured using a vernier caliper and an adjustable white board on which the laser beam was reflected. Data for the experiment involving weights showed that there is a general decrease in the length of the foci of the elastomeric lenses as more weights were added to the set-up. This can be attributed to the increase in curvature of the lenses as more weights were added. Data for the experiment involving spring balances showed that there is a general increase in the length of the foci of the elastomeric lenses as the spring balances are pulled harder. This can be attributed to the flattening or decrease in curvature of the lenses as the spring balances are pulled harder. A stretchable lens can be used to replace intraocular lenses in cataract extraction. By changing the focal length, the lens can work for a wide range of distances, and therefore serve as the definite solution to the development of cataracts and other conditions that affect visual activity.

評語

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