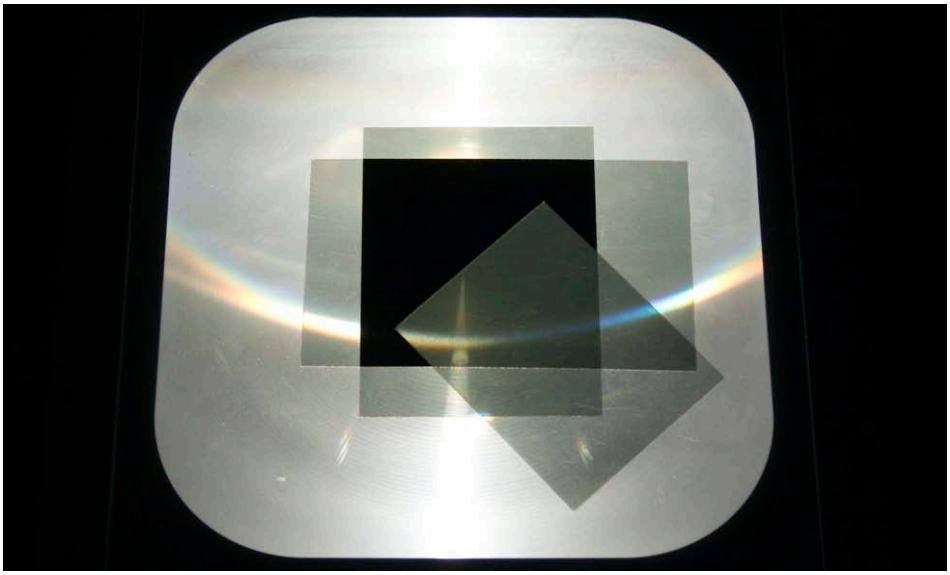
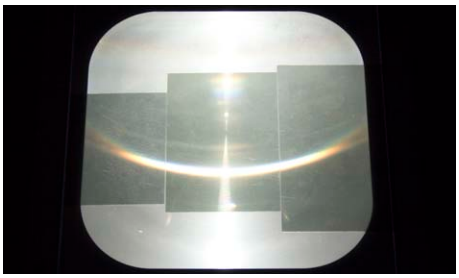
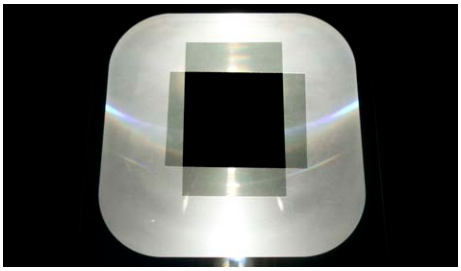
THREE POLAROIDS 6H30.10

Optics Polarization Circular Polarization







Concept:

When unpolarized light of intensity I_0 passes thru a linear polarizer whose transmission axis is oriented at an angle θ relative to the transmission axis of a second linear polarizer, the transmitted intensity, I, is given by Malus' Law: $I = I_0 \cos^2 \theta$.

This law can be applied consecutively to any number of polarizing layers, and is useful in explaining the resulting intensity of placing a polarizer at 45° between two crossed polarizers as described in Procedure 2 below.

Equipment:

- (3) Light Polarizing Filters
- Transmission Type Overhead Projector (available upon request; reflection type OHP will not display polarized light)

Procedure:

1. Cross two polarizing filters on the overhead projector to prevent light from passing through.
2. Insert the third polarizing filter between the two crossed filters at a 45° angle. This allows light to pass through all three filters.
3. Experiment by crossing the filters at various angles and noticing the changes in transmitted intensity.