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The 3 3/8" x 3½" x 3½" Acrylic Container (Prism)

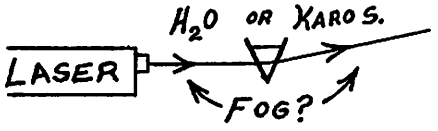
The Water and Liquid Sugar Prism Demo - studies of a water prism and a liquid sugar prism via the relative indices of refraction of the two substances.

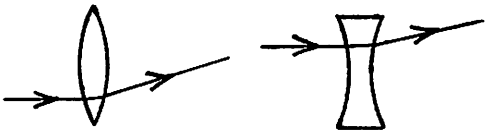
Part I - Using the laser.

Procedure: (a) Shoot the laser beam through the empty prism and note the red spot on the screen or wall.

(b) Nearly fill the prism with water and watch the location of the spot on the screen suddenly move upward.

(c) Carefully remove the water prism and in its exact place put in a prism nearly filled with Karo syrup. (Carefully pour the Karo syrup down the side of the container to reduce the production of air bubbles.) Note the new, higher location of the spot on the screen.



(d) Remind the audience (students) of the relationship of the prism effect to convex and concave lenses.

(e) Clean up - To avoid waterspots, do not leave the water or Karo syrup in the prism long. Empty promptly and immediately wipe clean and dry with kleenex. To avoid scratches, do not rub the acrylic and store carefully. Use very warm water to thoroughly dissolve and rinse out the Karo syrup. The syrup can be returned to its original bottle using a funnel with a large opening in its stem ( cut off the smaller tip?).

Part II - Using the slide projector with a very narrow single slit slide in the horizontal position.

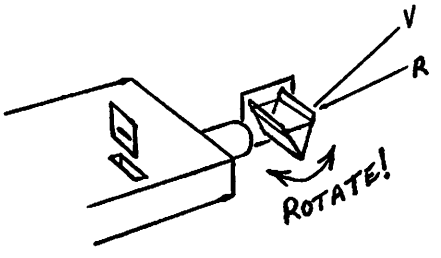
Procedure: (a) Shoot the projector beam through the empty prism and note the white image (narrow line or band) on the screen.

(b) Nearly fill the prism with water, rotate the prism for optimum effect, and note the dispersion (location and spread) of the spectrum on the screen.

(c) Carefully remove the water prism and in its exact place put in a prism nearly filled with Karo syrup. Note the new, higher, wider location of the spectrum on the screen.

(d) Remind the audience (students) of the relationship of the dispersive prism effect to chromatic aberration in lenses.

(e) Clean up - See above.



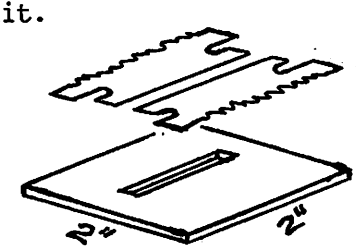
Cont. - The Acrylic Container (Prism)

Notes: (a) Making the very narrow single slit slide

(1) Cut out a 2" x 2" heavy cardboard (posterboard) square.

(2) Cut out a narrow, 1¼" x 1/8" , single slit in the center of the square.

(3) Take a double-edged razor blade, carefully snap it in two (or use two single-edged blades) and tape each cutting edge, facing each other and less than 1mm apart, over the cardboard slit.




(b) Making the rotating platform for the prism.

(1) Select a 5/4" thick piece of pine, 3 7/16" x 3 9/16" or larger.

(2) Drill a ½" dia. hole 2" deep in the side of the pine board.

(3) Cut a 4¼" long piece of ½" dia. dowel. Round the ends of the dowel, apply wood glue in the hole of the pine board and drive the dowel into the board. If not a tight fit, use some short brads to "set" the dowel. Add edges as you see fit (your own design).

(4) Apply a finish to the platform (waterproof it) to avoid water damage.

(5) Use the platform with a right angle clamp. Rotate the platform and tighten the set screw only until firm; do not over tighten! (Never let a student do this!)