

CD-R Spectroscope



A clear CD-R may be used as a grating simply by holding it about 20 cm from the eye and centering the light source to be analyzed in the hole of the CD. A particular advantage of this type of spectroscope is that it may be used to study sources of low intensity such as an LED or the moon.

Students should never look at the Sun with these devices!

Removing Labels from CD-R Discs

If clear CD-Rs with data tracks are not available, you will have to remove the laminated label from an ordinary CD-R. To do this, position the disc with the label side up. Using packing tape or duck tape and a quick pull of one or two pieces of the wide tape placed across the label will result in quick removal of the label.



3. CD-R Tube Spectroscope

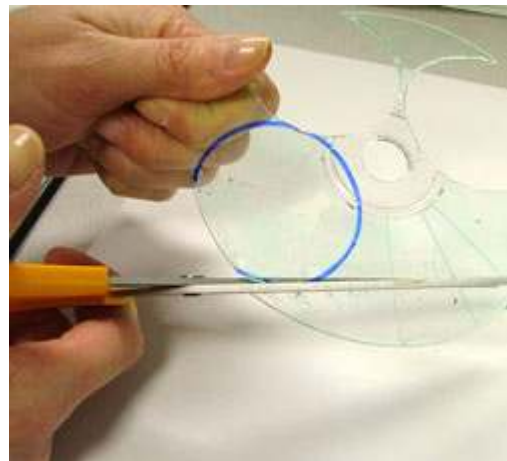
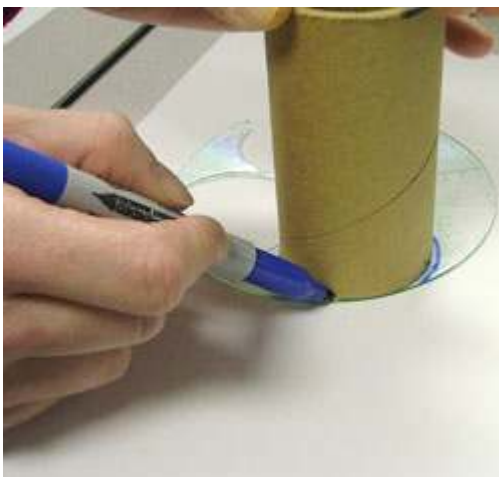
To cut the smaller discs that will be used as spectroscope gratings, you will need a clear CD-R disc with a data track, a cardboard mailing tube or paper towel roll, a pencil or pen and a pair of tin snips or heavy duty scissors.

Resources: A good source for mailing tubes is Uline Shipping Supplies at www.uline.com. Their phone is 1-800-958-5463. I use the 1.5" X 6" White Mailing Tubes Model Number S-1626. The cost \$0.48 each. Bulk prices available.

Repeat this process to obtain additional gratings. You should be able to obtain at least four gratings from a single CD-R.



Place one end of the mailing tube on the CD-R so that the edge of the tube touches the outer edge of the disc (see figure below). Use a marking pen to trace around the tube so as to leave a circular mark on the surface of the disc.



Use the tin snips (or a large pair of good scissors) to cut around the circular mark on the CD-R.

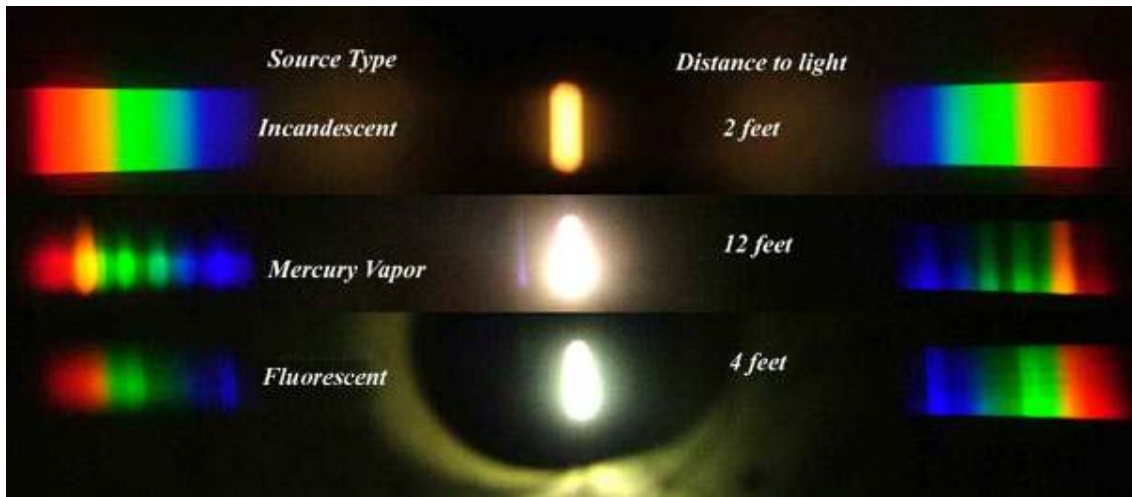
Now cover one end of the mailing tube with an opaque material such as construction paper or aluminum foil. A narrow slit, approximately 0.5 mm wide and 2 cm long should be cut in this end cap to permit light into the tube.



The circular grating is attached to the other end of the tube using household cement or hot glue. Before attaching the grating, make sure that the grating's grooves are parallel to the slit.



The finished Spectroscope (above) and resulting spectrum examples (below).



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