



SPECTROSCOPE

Demonstrate how different light sources diffract.

Materials

- Cardboard tube
- Used or blank CD
- Scissors
- Index cards
- Tape

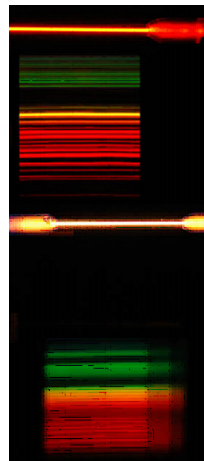


Photo credit:
nasa.gov

Procedure

- Trace the ends of the tube on the index card and cut out the circles.
- Cut a slit out of the middle of one of the circles, less than a centimeter wide. Tape the circles over the ends of the tube.
- Cut a slit in the tube on the opposite end from the circle with the opening. Slide the CD into the slit at an angle, the reflective side facing the opening.
- Cut a rectangle across from the CD slit. Make sure it is big enough for you to see through.
- Point the opening at the end of the tube at a light source. Observe the color pattern reflected by the CD.
- Try looking at different light sources. Compare the light's patterns.

Results

Different light sources will create different color patterns!

Why?

Different gases allow some colors of the light spectrum to pass through and block others. Fluorescent lights have mercury vapor and some street lights have sodium vapor, which will create very distinct light patterns. Bulbs without gases will also create distinct light patterns based on how they make light. When studying space, scientists use spectrosopes to figure out what kinds of gases are in parts of the universe and what different light sources are coming from.

This activity was adapted from NASA's Exploring Diffraction activity.
<https://www.nasa.gov/stem-ed-resources/exploring-diffraction.html>