



Diffraction

When light passes through or around edges of different materials it bends. This phenomenon is known as diffraction. Diffraction is a wave property, i.e., it can happen to all sorts of waves like a sound wave, electromagnetic wave, light and water waves. Scientists have long used diffractions produced by various materials to study their structure and composition.

In this activity, you will observe a diffraction pattern using a plain old DVD and a laser.

What you need

- Laser pointer
- DVD

What to do

1. Place the DVD shiny surface up on a table near a wall.
2. Turn off the lights in the room to make it easier to see the diffraction pattern.
3. Shine the laser at an angle on the shiny surface and observe the diffraction pattern on the wall.

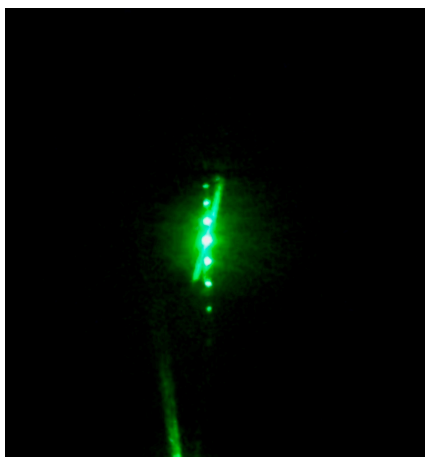
What you'll see

You will see a pattern of dots: that's the diffraction pattern! If you move the laser across the DVD by tilting the laser, you will see the distance between spots changing.

What's going on?

The laser light diffracts across the tiny grooves around the DVD, which are about 740 nm apart. As you tilt the laser, you are changing the diffraction angle. A similar technique is used with x-rays instead of visible light to help scientists study the atomic structure of materials (x-ray diffraction and x-ray crystallography).

Learn more



Diffraction:

<https://www.britannica.com/science/diffraction>

X-ray crystallography:

https://en.wikipedia.org/wiki/X-ray_crystallography

Image: diffraction pattern from DVD using green laser