

Try this

# Make your own spectroscope

*New discoveries are often made when a new piece of equipment is invented. The spectroscope was invented by Robert Bunsen and Gustav Kirchhoff. Back then, if you wanted a new piece of equipment, you tended to make it yourself and Kirchhoff made the first spectroscope in the late 1850s. He and Bunsen used it to discover the elements caesium and rubidium.*

You can make your own spectroscope very simply from a cereal box and a CD. You can use it to see the variation in the spectra produced by different types of light bulb.

## You will need:

- cereal box or similar
- CD
- sticky tape
- scissors
- ruler
- protractor (optional)
- light source e.g. light bulbs, candle flame

**SAFETY:** Take care with a candle flame

## What you do:

At the open end of the cereal box, cut a slit wide enough for the CD. Arrange the CD in the slit at a  $60^\circ$  angle and then tape up the box.

About 3 cm from the CD cut a hole in the top of the box above the CD. The hole should be about 2 cm across.

At the far end of the box cut a slit about 4 cm long and 1 or 2 mm wide. Again, this should be opposite the CD.

Point the slit of your spectroscope at a light bulb. Look down through the hole onto the CD. You should see a spectrum of the light from the bulb. If you look at a different type of light bulb (energy saving, filament, fluorescent) you will see a different spectrum.

**SAFETY:** Do not look at the sun using your spectroscope.

## Look here!

This website details some improvements you can make to your spectroscope.

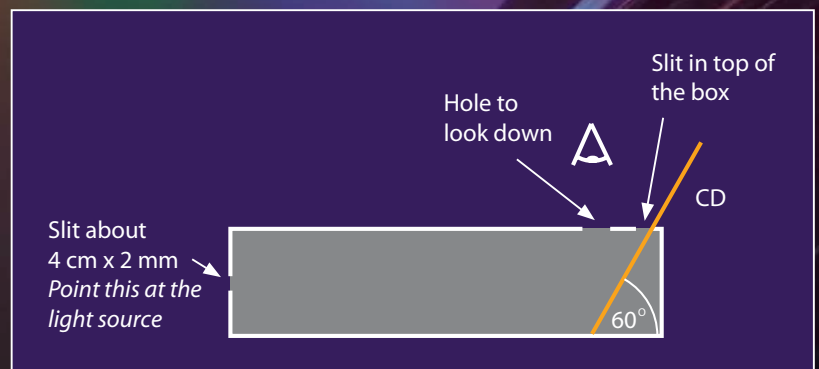
<http://tinyurl.com/37eahgn>

## What you see:

The spectrum from your spectroscope should look a bit like a rainbow. If the light source you are using produces a continuous spectrum (and a candle often does – although be careful not to set the box on fire) then you will see a complete rainbow. Most artificial light sources will produce distinct spectral lines, or, in other words, only some parts of the rainbow are present.



The cereal box spectroscope



A diagram of the spectroscope