# SPECTROSCOPE

## A spectroscope or spectrometer splits light into the wavelengths that make it up. Early spectroscopes used prisms that split the light by refraction — bending the light waves as they passed through the glass. A good example of refraction is a rainbow, in which sunlight passes through raindrops and is split into its different colors.

**Using your spectroscope**

When you’ve made your spectroscope, hold it under a light (so the light shines through hole b) and put your eye up to the circular hole. You should be able to see

a spectrum of colors. The CD acts as a diffraction grating to split the light into the colours of the rainbow. Try looking at different light sources to see what colours of the spectrum they give out or emit.

 

The sun and many torches emit all the

colours of the rainbow and a

**continuous** spectrum of all the

colours can be seen.

If you look at a TV screen or a

fluorescent light you will see **separate**

**lines** of different colours

**Spectroscopy in Science**

**The way that the Electromagnetic Spectrum interacts with matter is called Spectroscopy. We use special spectroscopes in science to find out lots of things about everything around us Astrophysicists use spectroscopy to find out what stars are made of and how galaxies move by studying the light they emit into space. 1Image from** <http://cosmology.com/BigBang4.html>

**New chemical compounds are identified usings pectroscopy to find out what elements they are made of. Solar scientists use spectroscopy to investigate new dyes and materials for solar cells.**

In astronomy-

Astrophysicists use spectroscopy to find out what stars are made of and how galaxies move by studying the light they emit into space.

**In chemistry-**

**New chemical compounds are identified using spectroscopy to find out what elements they are made of. Solar scientists use spectroscopy to investigate new dyes and materials for solar cells.**

**Making the spectroscope**

**1. Glue this template onto an A4 piece of card.**

**2. Cut along all the solid black lines with scissors, including line a, and cut out the rectangles b and c (it’s a bit tricky!).**

**3. Fold along all the dotted black lines.**

**4. Make the template into a box by joining the same numbered flaps together, e.g. 1 joins to 1.**

**5. Put a CD into the box through the slot you made at line a with the bottom “rainbowy” side of the CD facing upwards.**

**6. Look into the box through the square hole and you should be able to see light split into a rainbow.**

**7. Try looking at different types and colours of light and see what changes in spectroscope**