Spectroscopy

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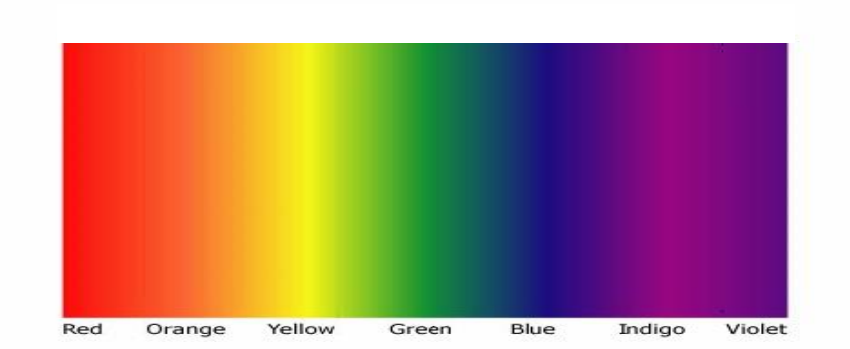
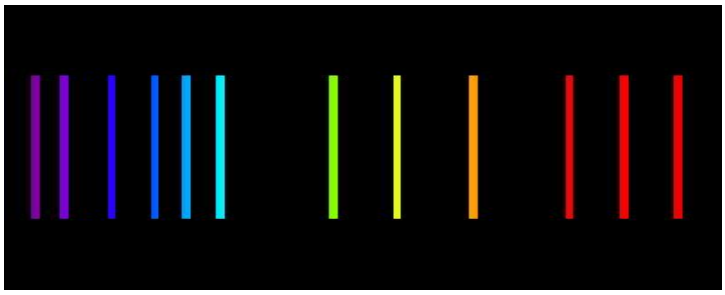
Continuous and Line Spectra

Astronomers can find out information about stars from the light the star emits using an instrument called a **spectroscope**.
The spectroscope splits up the light to produce a spectrum.
There are two types of spectra:

- **Continuous** – produced by light from solids, liquids and gases at high pressure and at high temperature. Each colour in the spectrum has a different frequency and wavelength



- **Line** – produced by hot gases at low pressure and gases which have an electric current passed through them. Each line in the spectrum corresponds to a particular frequency and wavelength.



Line spectra are extremely useful for astronomers because every chemical element has its own unique spectrum (like D.N.A or fingerprints). This allows astronomers to identify elements present in distant stars.

You may find this easier to understand after looking at the example on the next page.

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Stellar Detectives

Example: Identify the elements that make up the unknown star from the line spectra below. The line spectra for hydrogen, helium, sodium and calcium are given below to help you.

Unknown star

Hydrogen

Helium

Sodium

Calcium

Answer : Hydrogen and Helium.

All spectral lines present in Hydrogen and Helium are present in the unknown star.