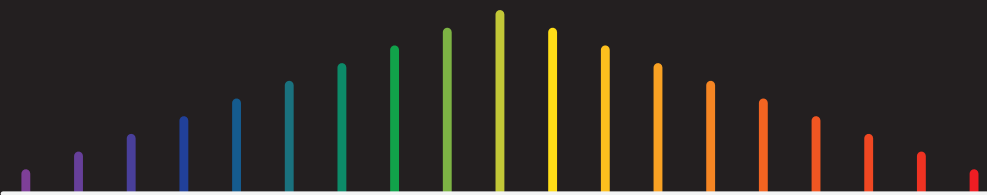


What are combs used for?

Combs have two main features:

1. They create a rainbow of light, with a precise selection of frequencies
2. These frequencies can be used as both as a ruler and clock

The ruler is used for measurement, detection and analysis while each of the different frequencies can be used for information sharing.

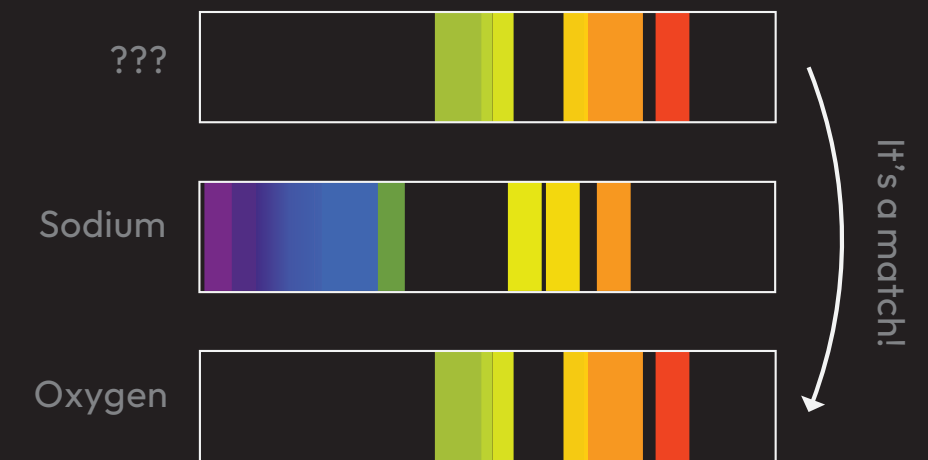


Analysis

Combs produce equally spaced frequencies of light that can be matched to a ruler. If a sample emits an unknown frequency, it can be compared to the nearest known frequency on the ruler to help scientists work out what it is.

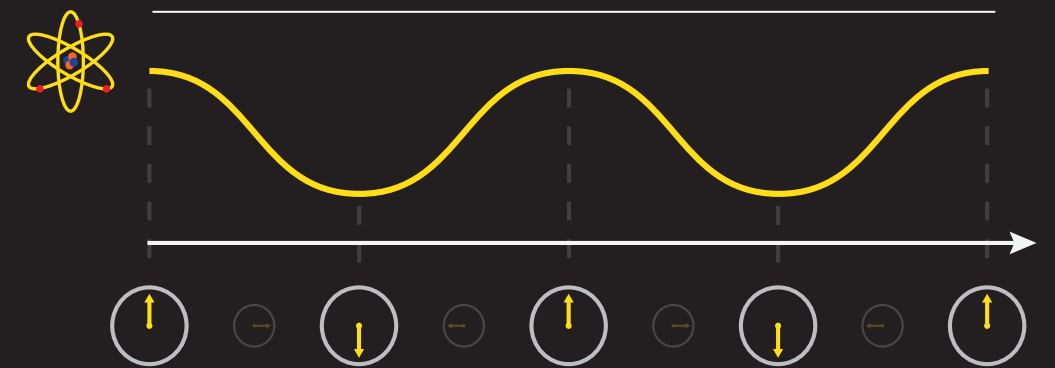
Detection

Scientists can use combs to find out what something is made of by comparing the frequencies of light that are absorbed/reflected by an unknown substance to known substances like atoms, molecules and ions.



Measurement (or Time Keeping)

Combs can be used to make precise atomic clocks. Atoms regularly change and produce waves of light. Combs detect these waves and use the peak of the wave as the 'tick' of the clock to keep track of time.



Information Sharing

Information on the internet is shared around the planet using light via fibre-optic cables in the ground and under the sea. Combs can help boost the number of frequencies (colours) of light sent down one cable to allow more people to connect to the internet faster.

