

Light & Electrons : A new Atomic model

New atomic model has evolved in 20th century

- **Result of investigations into the absorption and emission of light by matter**
- **Reveal a relationship between light and an atom's electrons!!**

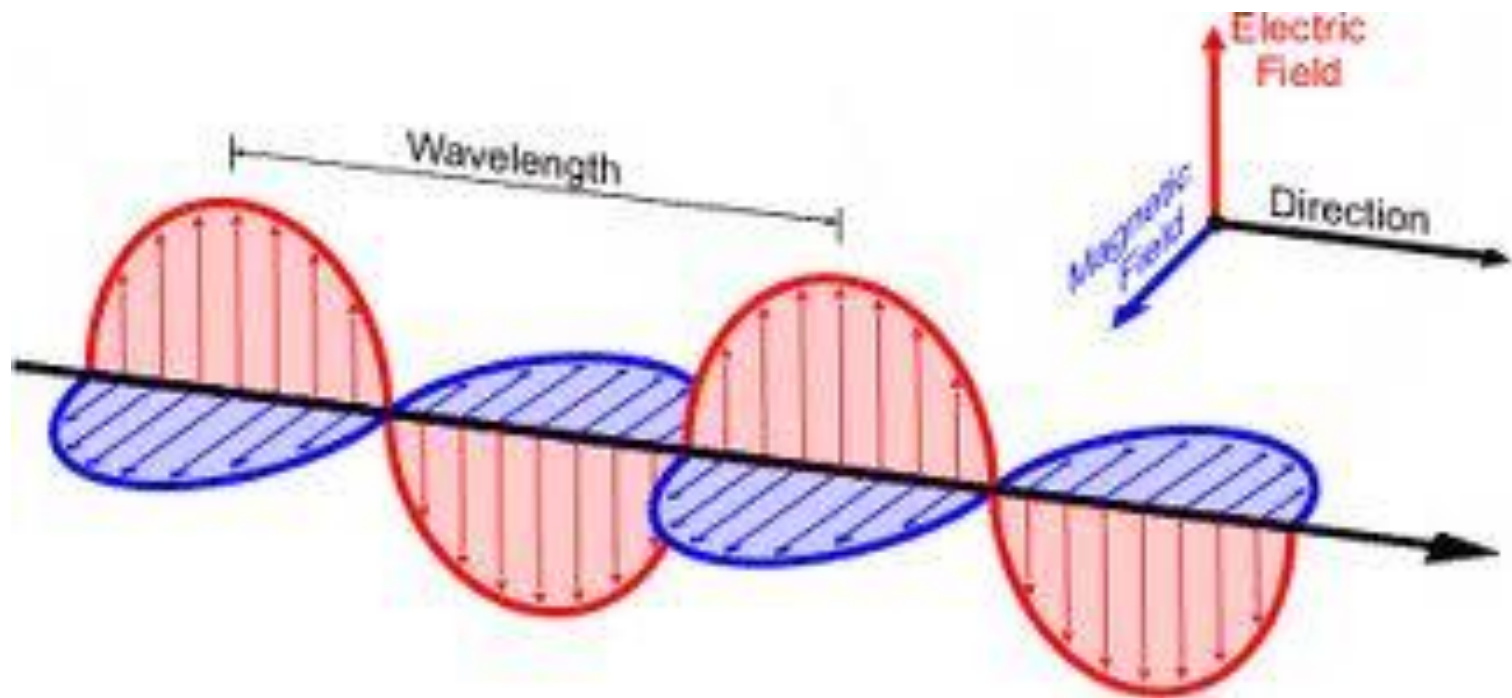


Visible Light is Electromagnetic radiation

❖ **a form of energy that exhibits wavelike behavior as it travels through space**

❖ **Travels as an Electromagnetic Wave**

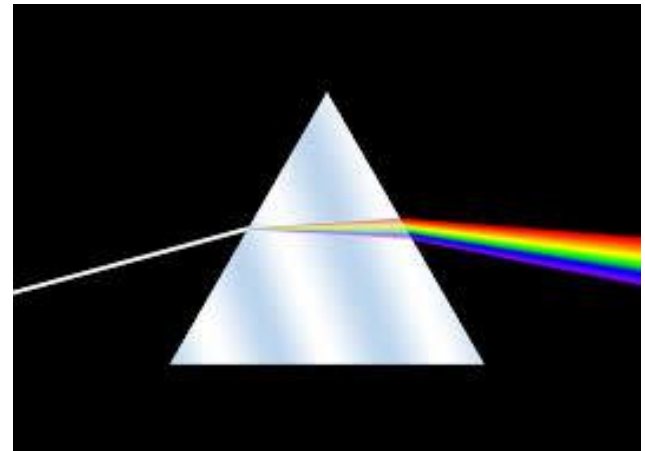
- **Waves that consist of changing electric and changing magnetic fields**
- **Mostly invisible**
- **Waves travel by regeneration: changing electric fields (moving charges) produce changing magnetic fields, and vice versa**
- **Can travel without a medium**



In 1800, William Herschel used a prism to separate a ray of sunlight into bands of color.

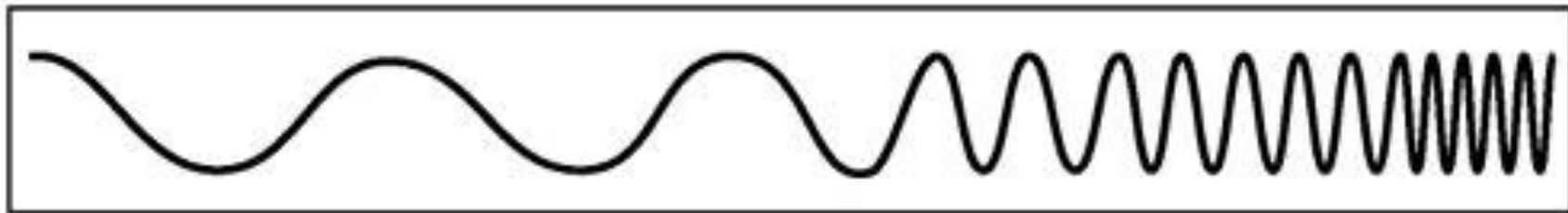
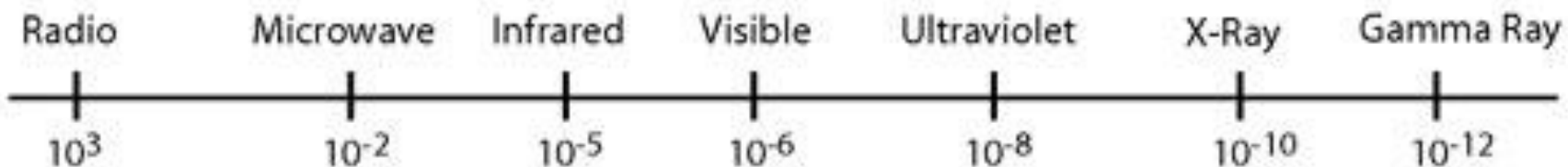
- Light separated into wavelengths**
- Placed thermometers at various places along the color bands**
- Discovered that different colors had different temperatures**
- Found that it was even hotter beyond red light..indicating there must be invisible radiation beyond...**

*****The range of electromagnetic waves is called Electromagnetic spectrum**

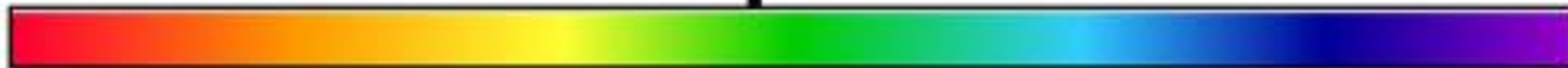


THE ELECTRO MAGNETIC SPECTRUM

Wavelength
(metres)

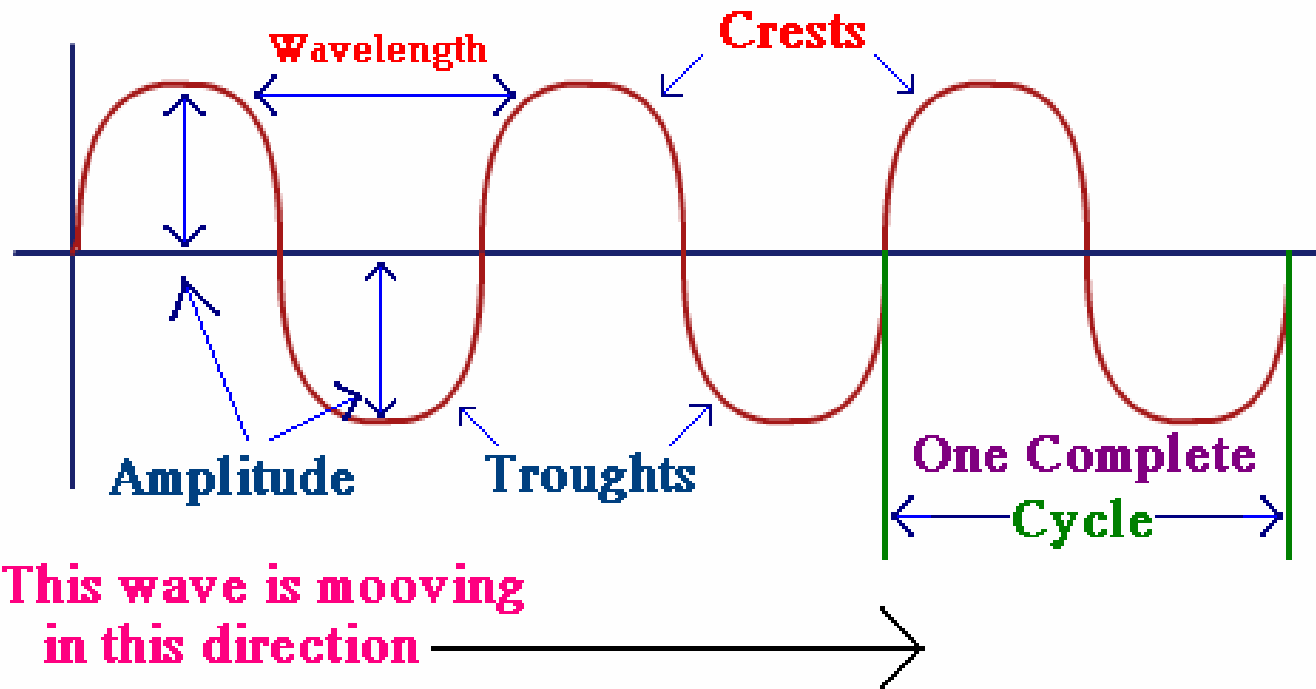


Frequency
(Hz)



Wave: A disturbance that carries energy from one place to another

- **Exhibit periodic motion: repeats at regular time intervals**



Frequency: the number of waves that go by per second

measured in Hertz (Hz)

Waves/second

Wavelength: the distance between a point on one wave and the same point on the next cycle of the wave.

measured in meters, centimeters, nanometers

lambda

