



# Light

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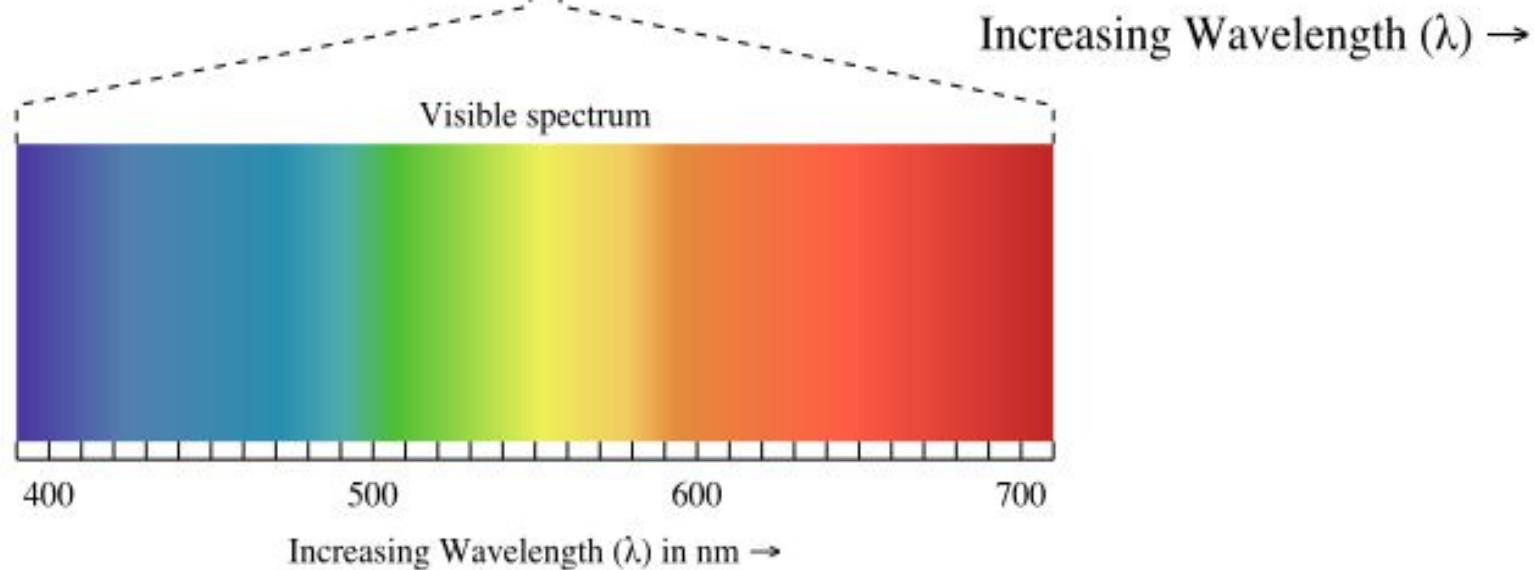
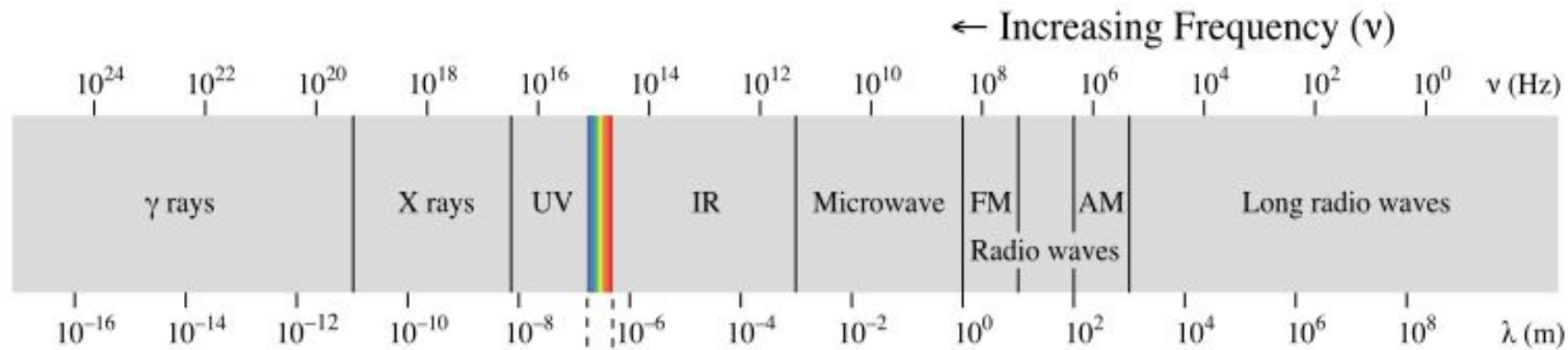
# What Is Light?

- Energy
- Emitted by vibrating electric charges
- Travels as electromagnetic waves



# Color

- The brain's interpretation of the **frequency** of light
- Low frequency = redder light
- High frequency = blue light
- Infrared = light frequencies below 430 THz
- Ultraviolet = light frequencies above 770 THz





# The Speed of Light

- The speed of light is **constant** in a **vacuum**
- **Medium** Changes → Average **Speed** Changes
- Commonly believed that nothing can travel faster than light
- Speed of light = 299,792,458 m/s



# Opaque Materials

A material is opaque when the frequency of light matches the natural frequency of its electrons.

- Atom resonates
- The material heats up instead of letting the light pass through



# Transparent Materials

A material is transparent when the frequency of light **does not** match the natural frequency of its electrons.

- The electrons cannot sustain the vibration the light induces
- The atom obtains sustainable motion by re-emitting the light
- Light emitted passes to the next atom

