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SCENIC SCIENCE

LESSONS 7B

HOW WOULD YOU...

- Make sense of the light in the night sky?
- Find your way in the dark?
- What simple tool would make the most difference?

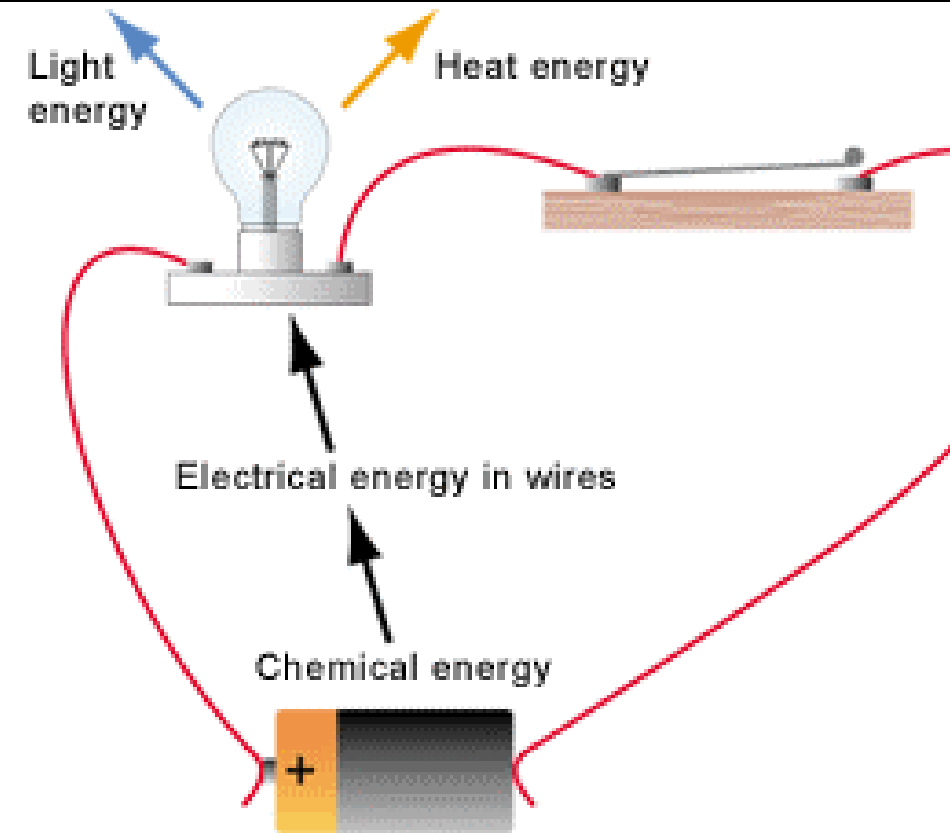




- Navigation – North Star
- Time – Hands on a Clock
- Seasons
- Day & Night

LIGHT AT NIGHT

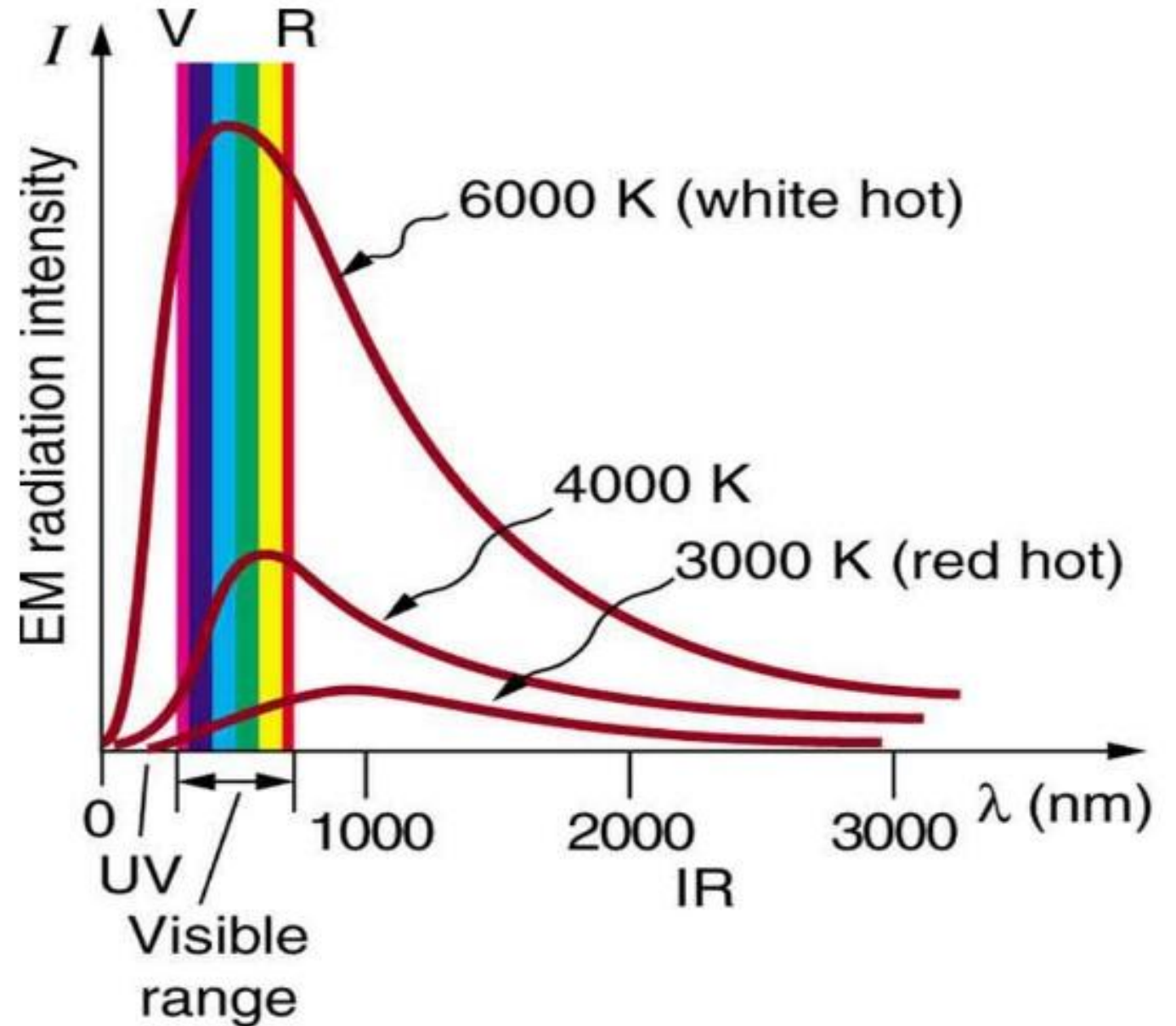
RADIANT ENERGY IS LIGHT ENERGY...



- SOLAR ENERGY is Electromagnetic (EM)
 - Radiant Energy
 - Kinetic Energy
 - Light Energy
- Radiant kinetic energy releases light (and heat)

OUR SUN'S LIGHT

- Peaks in the Green at 5770 K
- Powers our Food Sources
- Can be used to generate ELECTRICITY

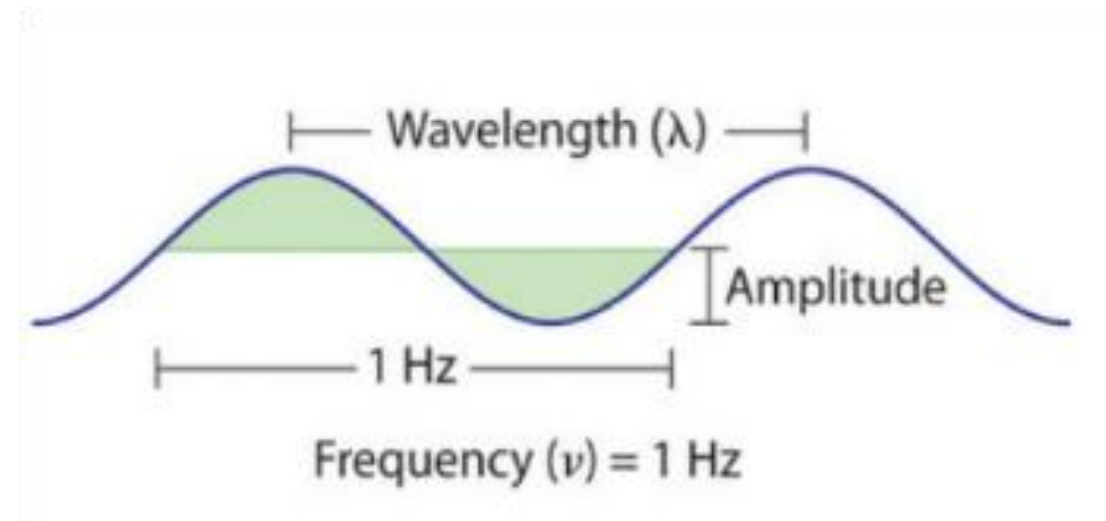


ENERGY MOVES IN WAVES

WAVELENGTH – a distance measure from crest to crest.

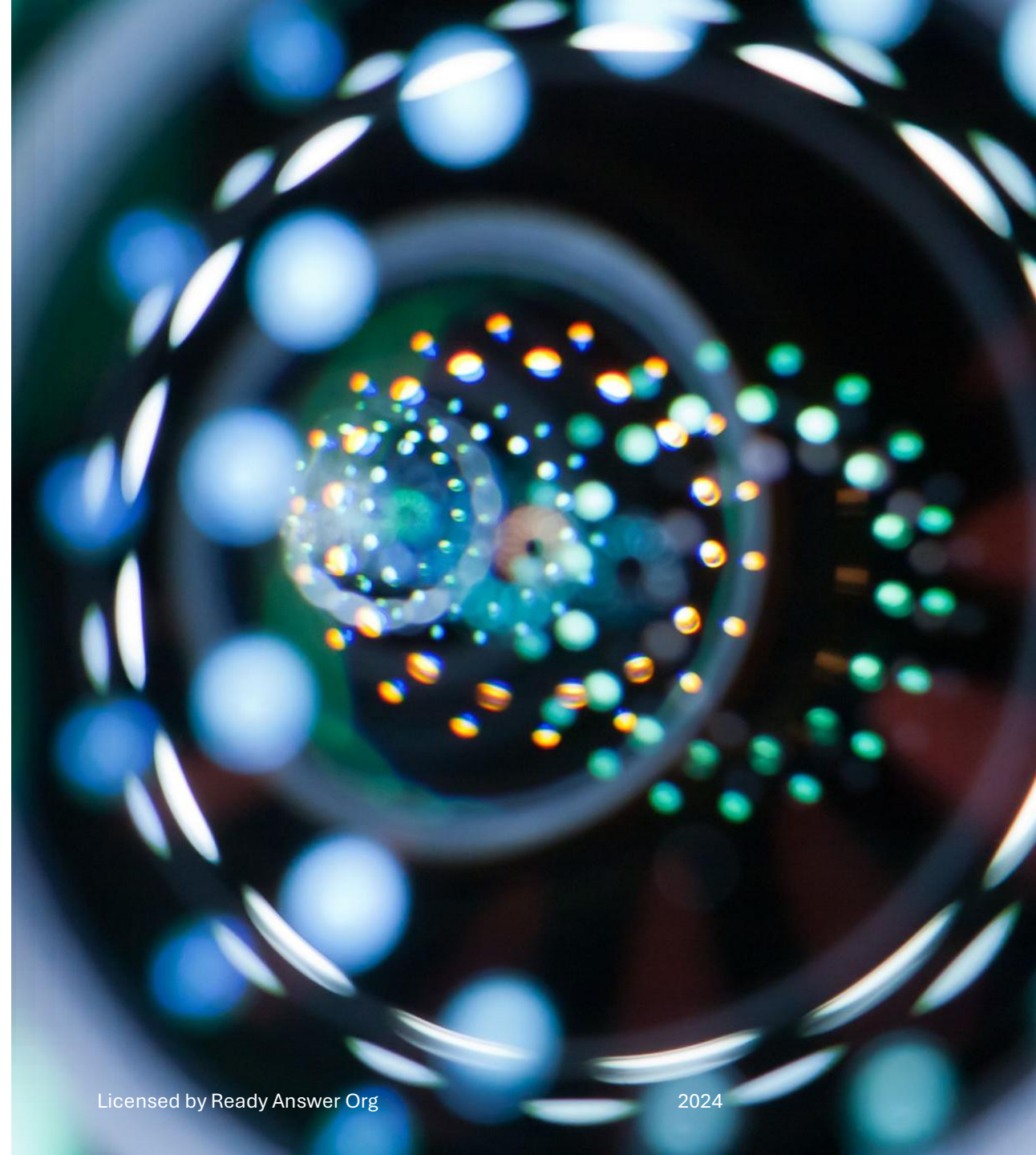
FREQUENCY – the number wave cycles per second (ν) given in Hertz (Hz).

AMPLITUDE – one half the height of a wave (intensity)



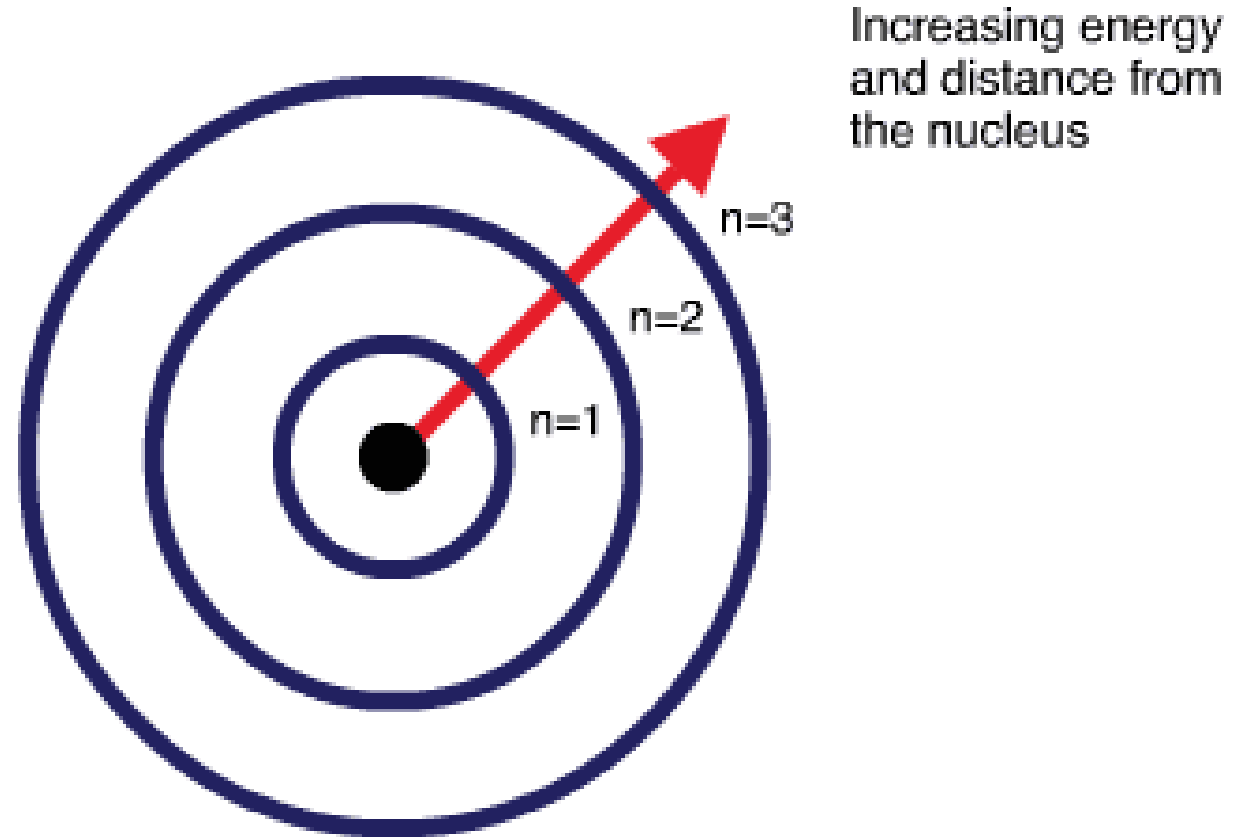
LIGHT IS ALSO CONSIDERED A PARTICLE

- **Photons** are light particles
- With distinct Wavelengths and Frequencies
- Unique Energy Signature
- Interact with Electrons



PHOTON ENERGY

- Provides Energy to Electron
- Electrons Move
- Creating Static Electricity
- Or, combined with metal wiring, they create **Electricity**



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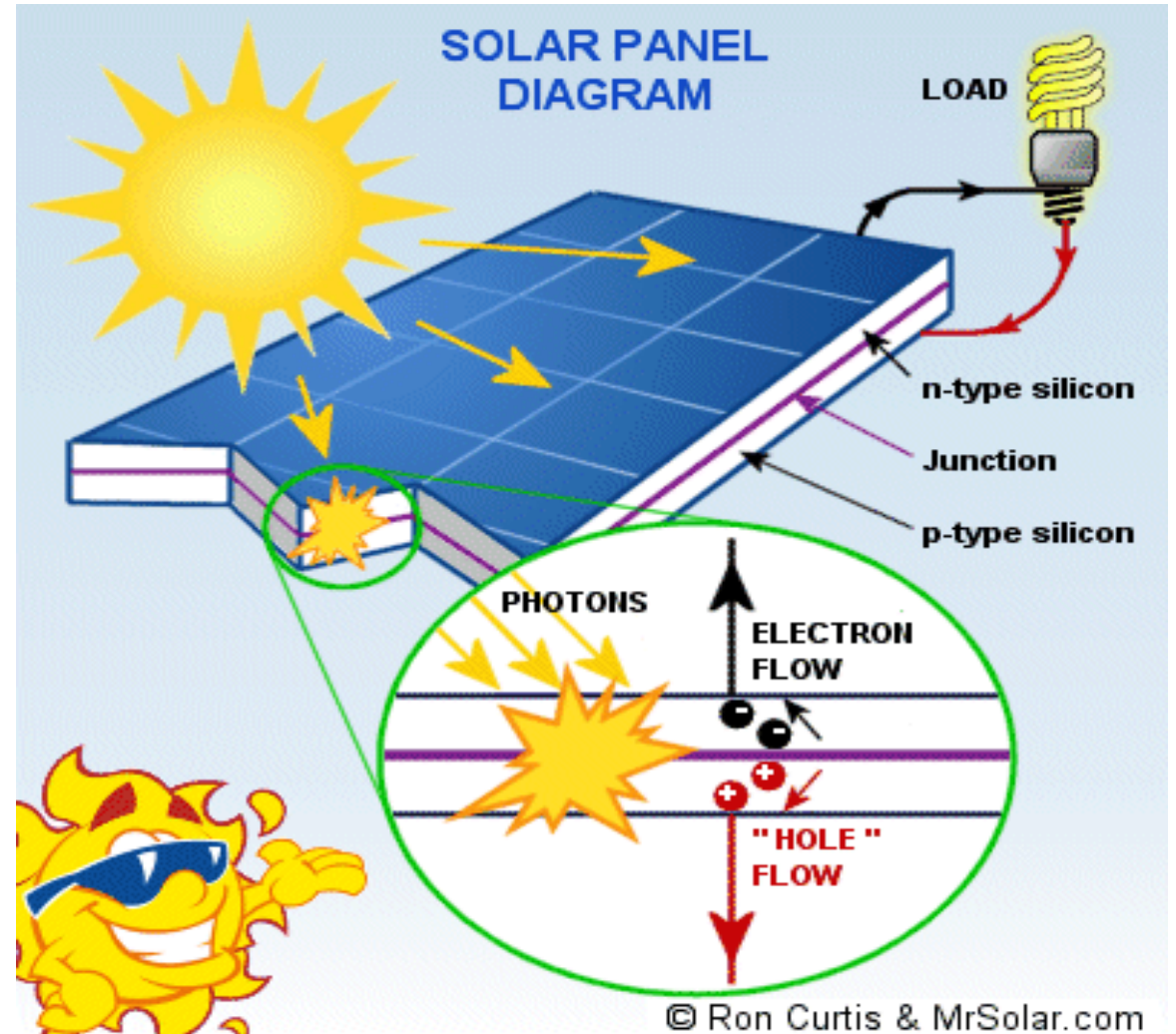
HARNESSING SOLAR ENERGY to do WORK

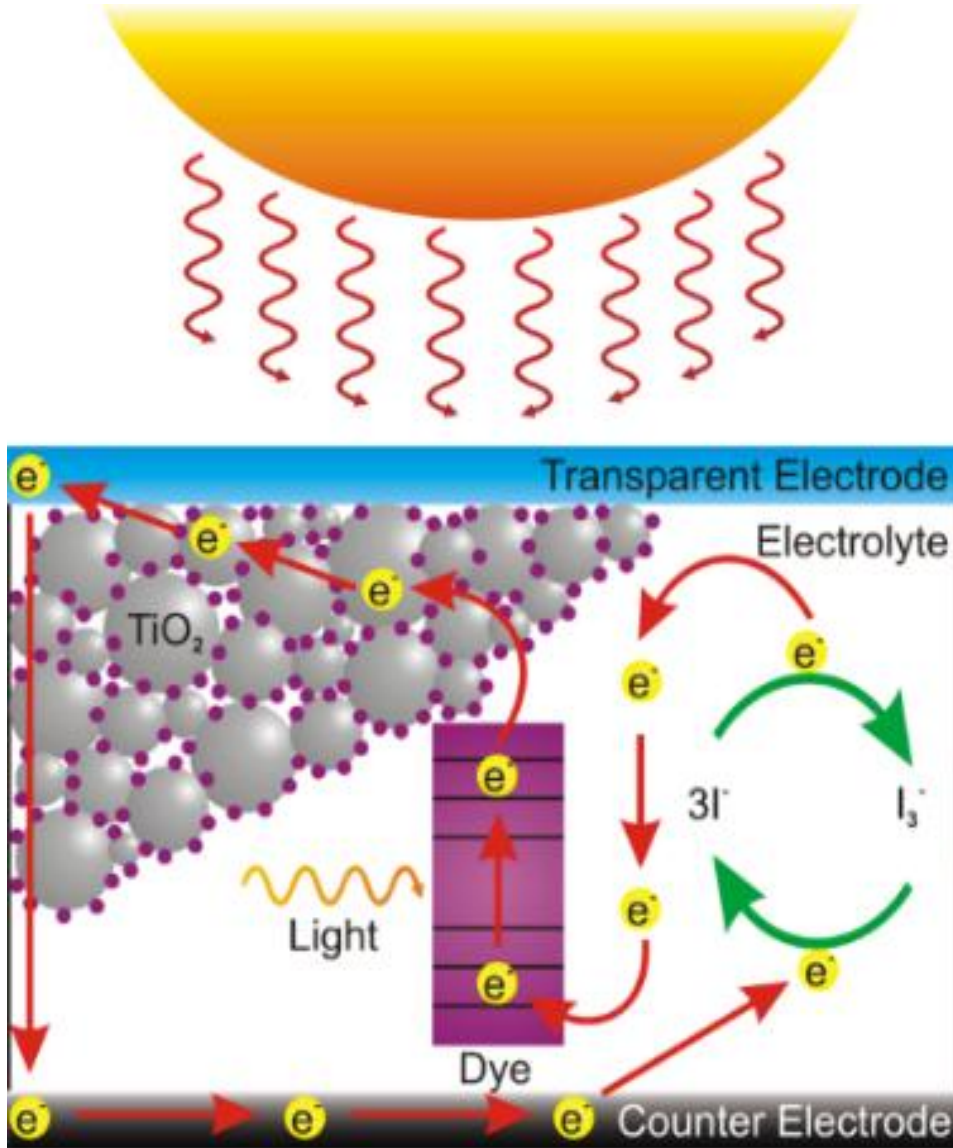
- EM Waves and Photons can be collected
- Solar Panels collect sunlight (radiation)
- Light is energy and can do work



- Solar Panels are installed where sunlight can be absorbed
- Individual solar cells collect photons
- The energy is transferred to electrons and wiring

Solar Panels



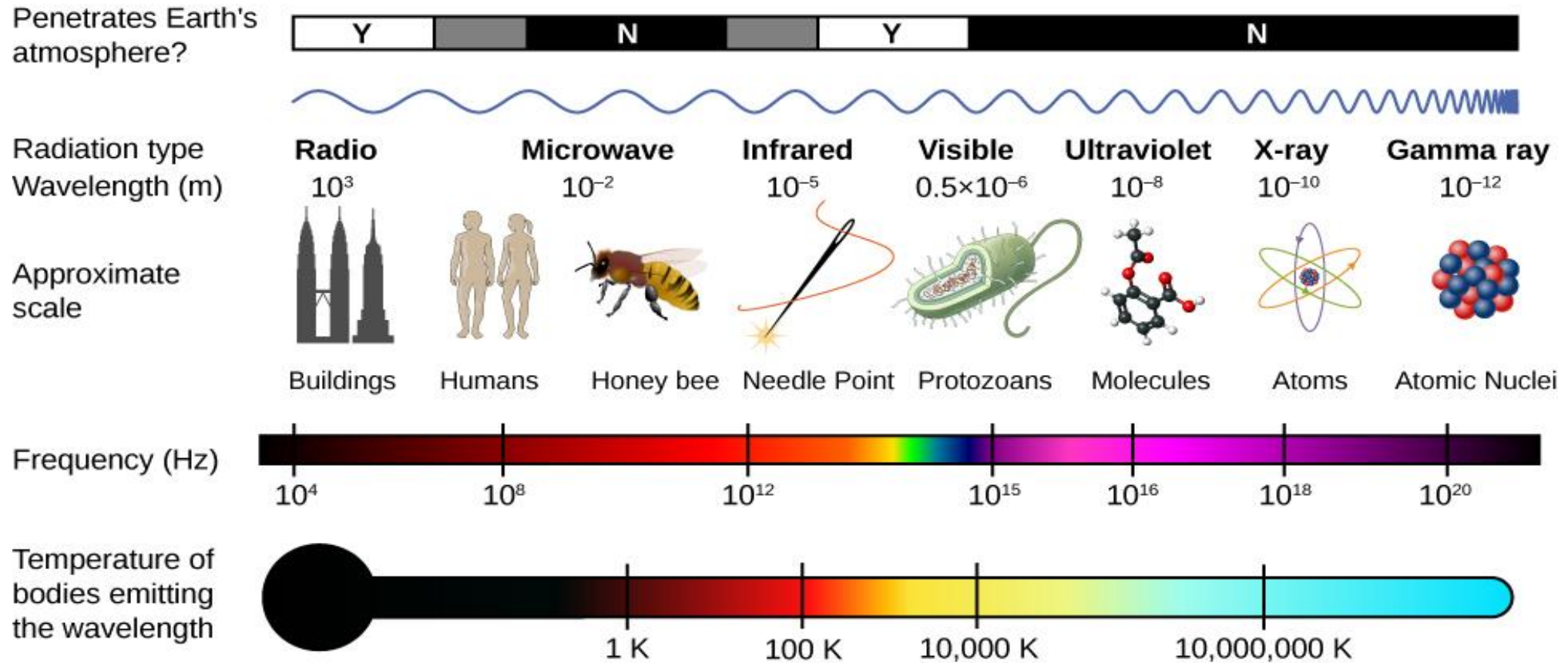


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Solar Cells

- Absorb Photons
- Energize Electrons
- Mobilize and Conduct Electrons
- Create Electricity Directly

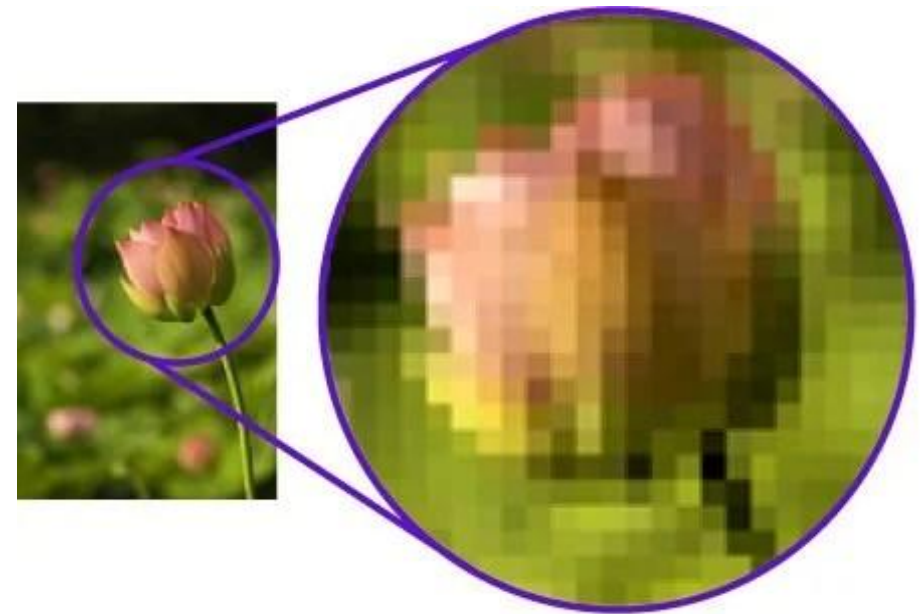
ELECTROMAGNETIC (EM) WAVES - ENERGY



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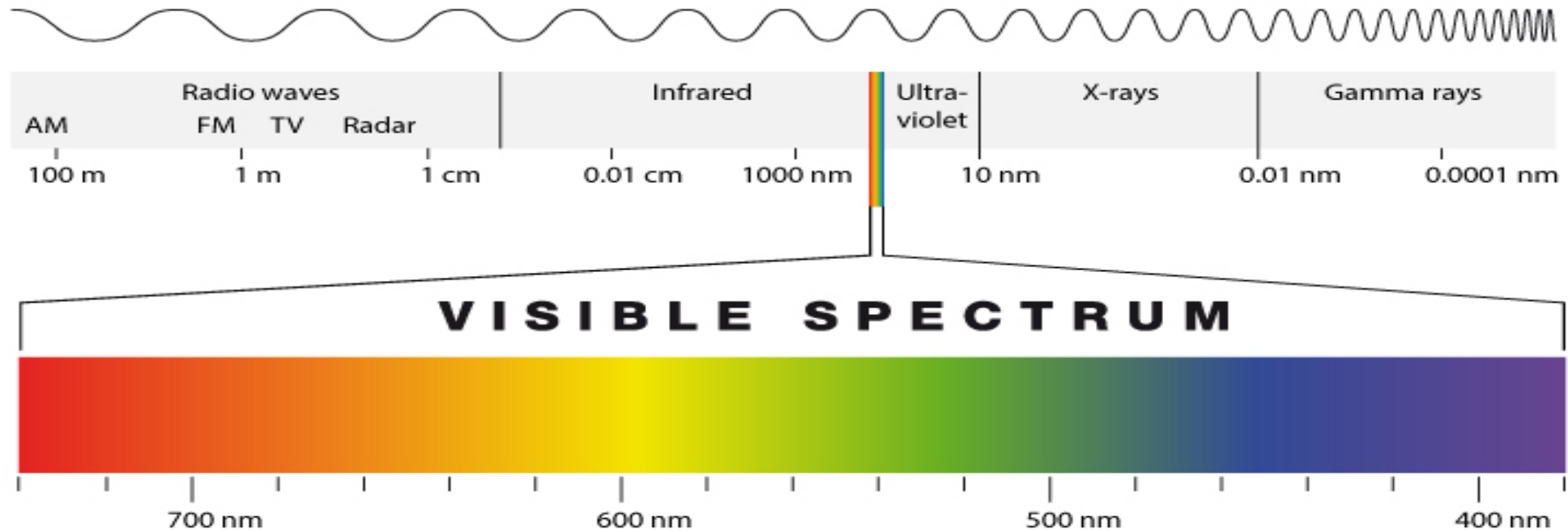
Other Light Collectors – CAMERA'S CCD – CHARGE-COUPLED DEVICE

- A CCD also collects photon energy
- Each pixel on the CCD sensor identifies a color
- Each square is compiled together to make an image
- CCD's replace camera film



LONGER WAVELENGTHS ARE USED FOR RADIO/CELL PHONES (LOWER ENERGY USE)

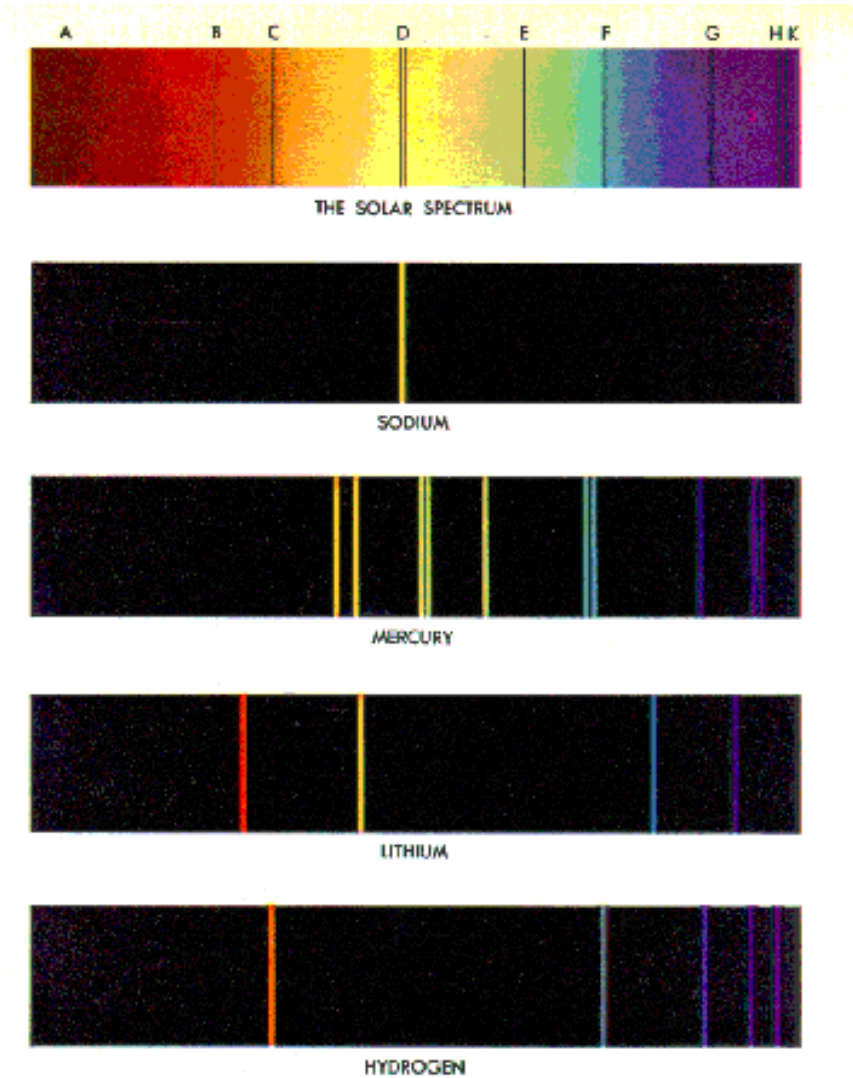
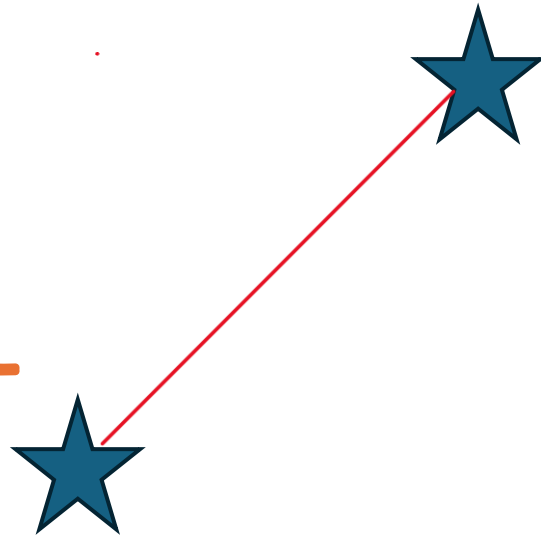
LOWER FREQUENCY = LOWER ENERGY



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SPECTRA

- **ABSORB** – Elements absorb certain colored light/photons
- **EMIT** – Elements also emit certain colored light/photons →



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REFLECTION OF LIGHT

- The colors of light we see is reflected to our eyes
- Green plants reflect primarily green
- The other colors of the rainbow are absorbed
- Absorbed light energy is used for photosynthesis



Black and White

- Black absorbs all colors of light
- White reflects all colors of light
- Which color keeps you cooler?
- Which color keeps you warmer?

APOLOGETICS

- In **Genesis 1:3**, God said, “*Let there be light*” and there was light.
- Light is the building block of our universe.
- Moses wrote it but didn’t know it.
- Yet, this simple statement assures us that “supernatural intelligence” inspired the Bible.

REMEMBER THESE THINGS

Robots may be made in our likeness, but they're far from human. Humans are made in God's image. We have the breath of life, unlike a robot that runs on batteries and electricity. Although Artificial Intelligence (AI) can add/subtract or process more information faster, it will never have free will to make choices, or self awareness, or the ability to make the moral decisions God asks us to make.



Psalms 18:28 “You, Lord, keep my lamp burning; my God turns my darkness into light.”