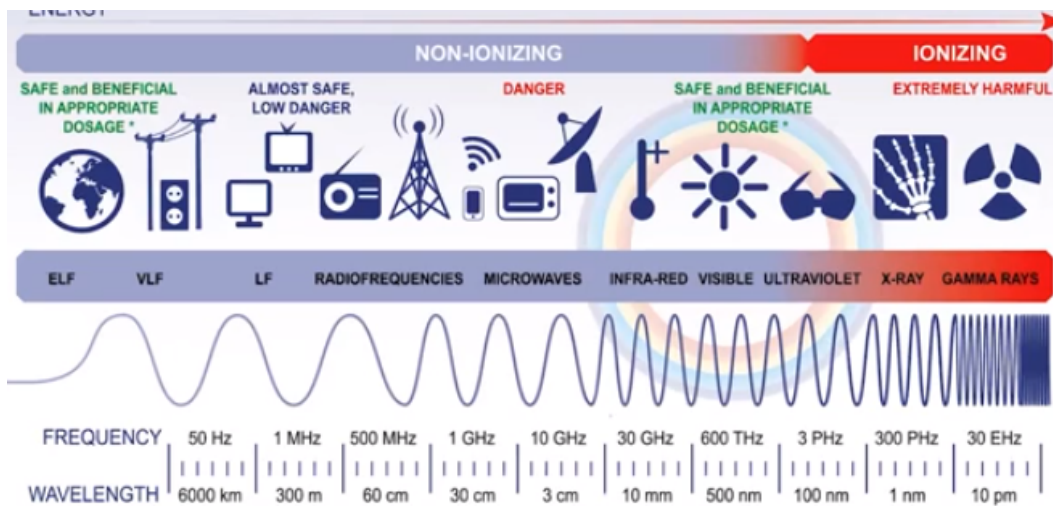


AP Chemistry Daily Videos

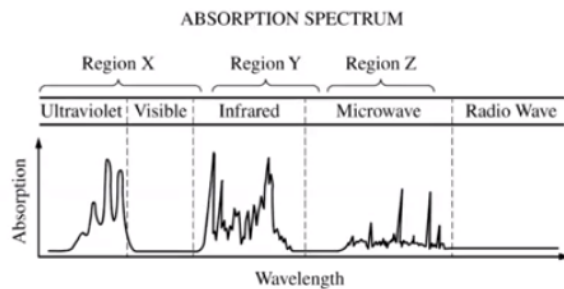
3.11 Spectroscopy and the Electromagnetic Spectrum

Daily Video #1

1. Which type of radiation is related to transitions in molecular rotational levels?
2. Which type of radiation is related to transitions in molecular vibrational levels?
Why?
3. Which type of radiation is related to transitions in electron energy levels?



4. Pause the video at 1:45 and attempt the problem, then evaluate how you did and identify any errors



The diagram above represents the absorption spectrum for a pure molecular substance. Which of the following correctly indicates the type of transition observed for the substance in each of the regions of the absorption spectrum?

- | | | | |
|---|-----------------------------------|---------------------------------|-----------------------------------|
| A | Region X
Molecular vibration | Region Y
Molecular rotation | Region Z
Electronic transition |
| B | Region X
Electronic transition | Region Y
Molecular rotation | Region Z
Molecular vibration |
| C | Region X
Molecular rotation | Region Y
Molecular vibration | Region Z
Electronic transition |
| D | Region X
Electronic transition | Region Y
Molecular vibration | Region Z
Molecular rotation |

5. Pause the video at 3:21 and attempt the problem, then evaluate how you did and identify any errors

N_2 molecules absorb ultraviolet light but not visible light.
 I_2 molecules absorb both visible and ultraviolet light. Explain these observations.