Color

- Light is a wave
- What oscillates? Electric and magnetic fields
- $v = \lambda f$
- Wavelength (λ) or frequency (f) \rightarrow color



Image courtesy of: http://nicholnl.wcp.muohio.edu/ChemistrySociety/Spring2004/ProbsOzone/WavelengthRedBlue.gif



<u>Electromagnetic</u> <u>Spectrum</u>

- Sunlight (aka "white light") contains all wavelengths of the visual spectrum, UV, IR
- Laser light contains just one wavelength

Figure courtesy of http://praxis.pha.jhu.edu/pictures/emspec.gif

• Suppose light is incident on glass with n = 1.5. What happens?



• Refraction! Both on entering...



• ... And exiting the prism.



• Now instead suppose the index of refraction of the glass is a little higher (n = 1.6). What happens?



• The light bends slightly more than before.



• And upon exiting, the light would be shifted slightly in comparison to the first scenario.



• Any ideas on how/why a prism works?

Dispersion

Image courtesy of http://en.wikipedia.org/wiki/Image:Dispersion-curve.png

How a Prism Works

- In a prism, the index of refraction is different for different colors (wavelengths) of light.
- As a result, refraction bends some colors more than others, creating the spread you see.

