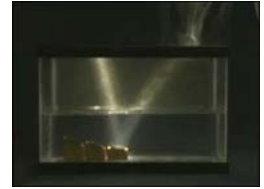


Color & Light

EM Spectrum
Waves

Video Clips

- [Rainbow](#)
- [Mixing Light](#)
- [Reflection](#)
- [Wave & Particle](#)
- [EM Spectrum / Photons](#)
- [EMS](#)



Gasses



Hydrogen

energy level	energy
n=5	-0.544 eV
n=4	-0.850 eV
n=3	-1.51 eV
n=2	-3.40 eV
n=1	-13.6 eV

- only certain energies are allowed
- the change in the energy between two levels corresponds to a certain color photon absorbed or emitted by the atom
- the lowest energy level is the ground state
- higher energy levels are called excited states

Absorption

- If light of a continuous spectrum is incident on a gas of hydrogen atoms, then electrons will absorb some of the light.
- As a result, bands of the spectrum are missing; these are called **absorption lines**.
- By the way, these same atoms emit the same colors in an emission spectrum!



Emission

- If excited **hydrogen** atoms fall to lower energy states, photons will be emitted.
- The emitted photons will be detected as light of certain bands of frequencies (i.e. colors).
- The collection of bands (or lines) forms an emission spectrum.



What's so EXCITING?

- Sure, electrons get excited when they change energy levels, by why do we get so excited?
- Each element absorbs and emits a different set of spectra.
- By measuring the spectral lines, we can know what element a gas is made of.
- Now, we have way of determining what elements stars like the Sun are composed of

Clouds of gas (nebulae) emit light, some by absorption and some by emission

emission
nebula

