

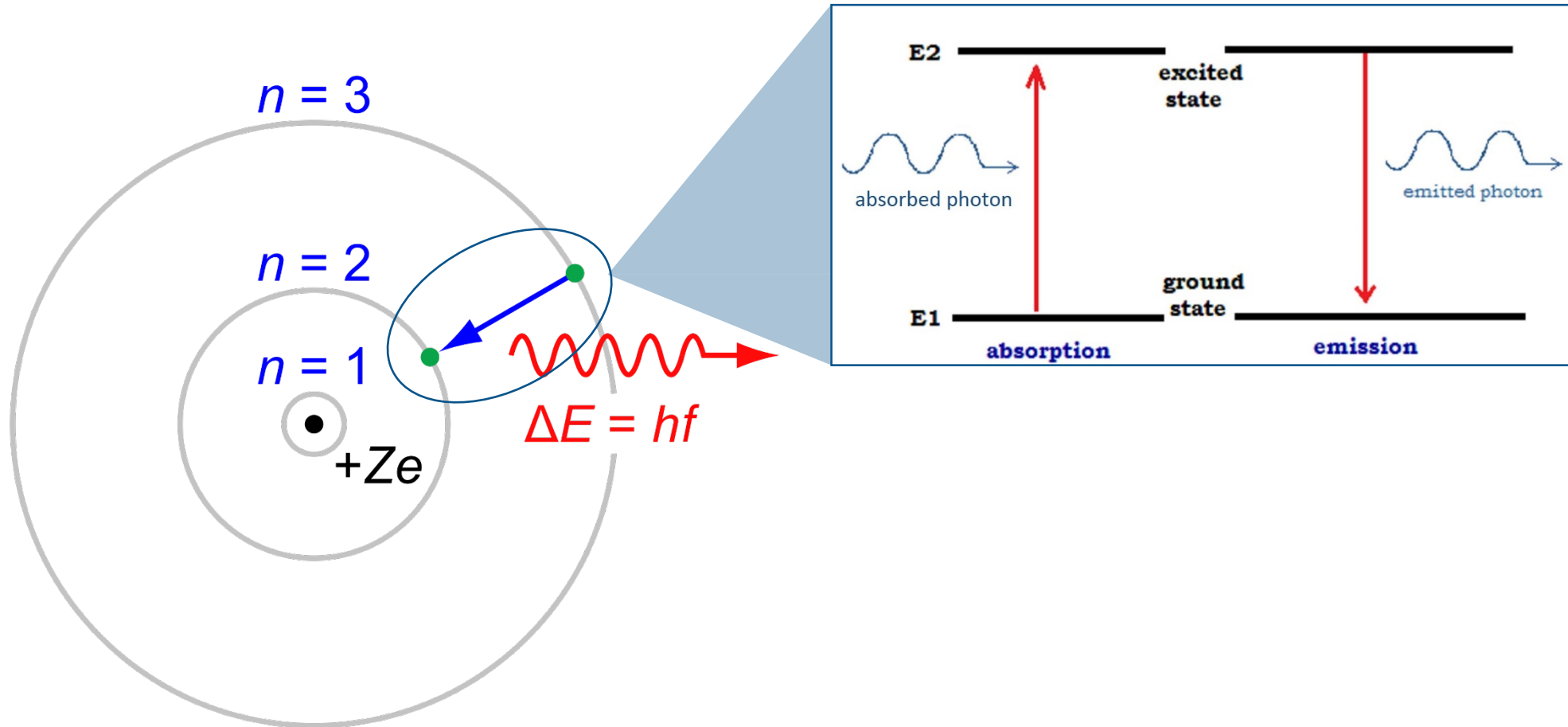
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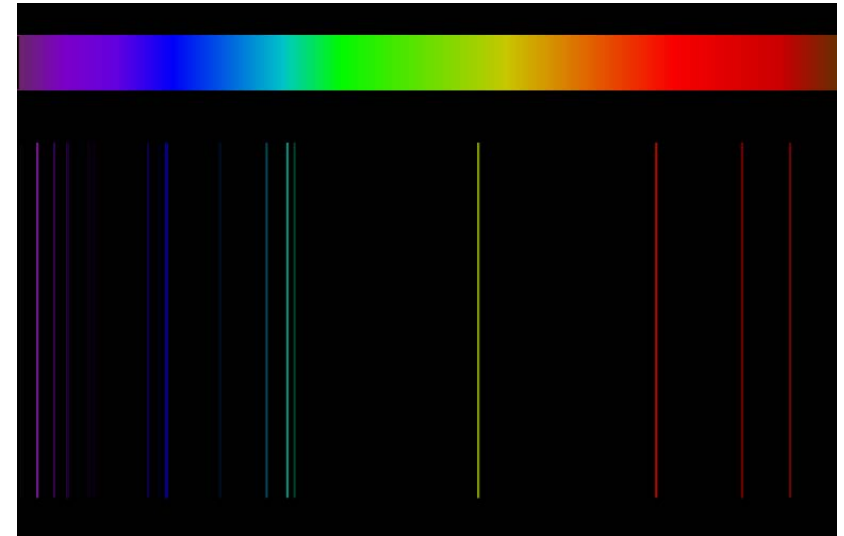
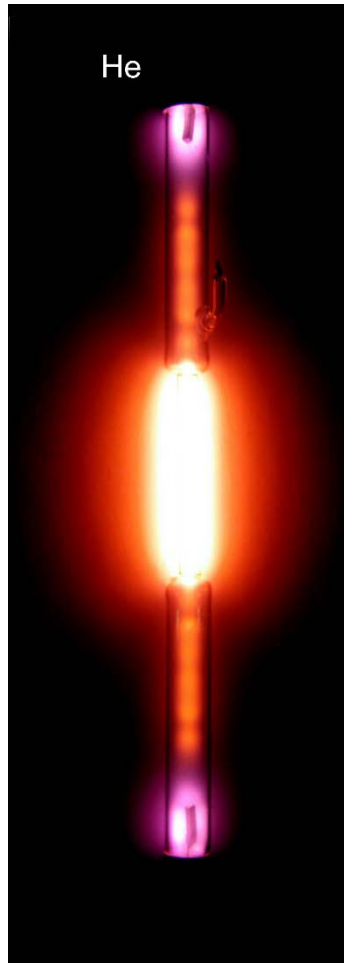
Elmer Imes and Spectroscopy

Prepared by the Center for the History of Physics at AIP

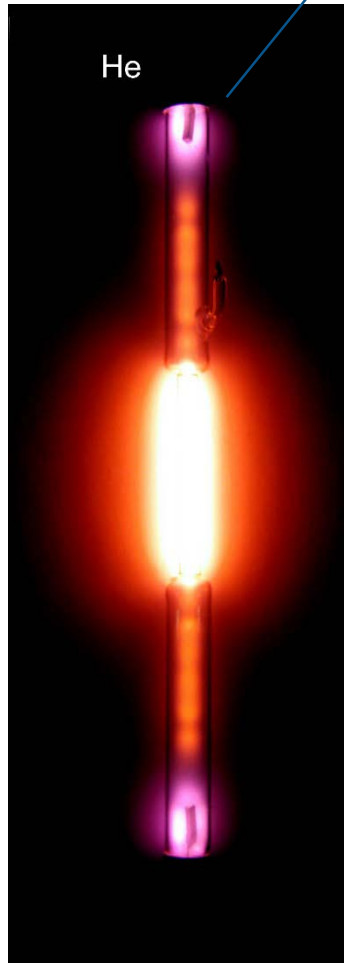
Atoms of Different Elements Absorb/Emit Light of Characteristic Frequencies



Atoms and Energy are Needed to Produce a Spectrum, We Need to Split Up the Light to See It



Viewing Spectra

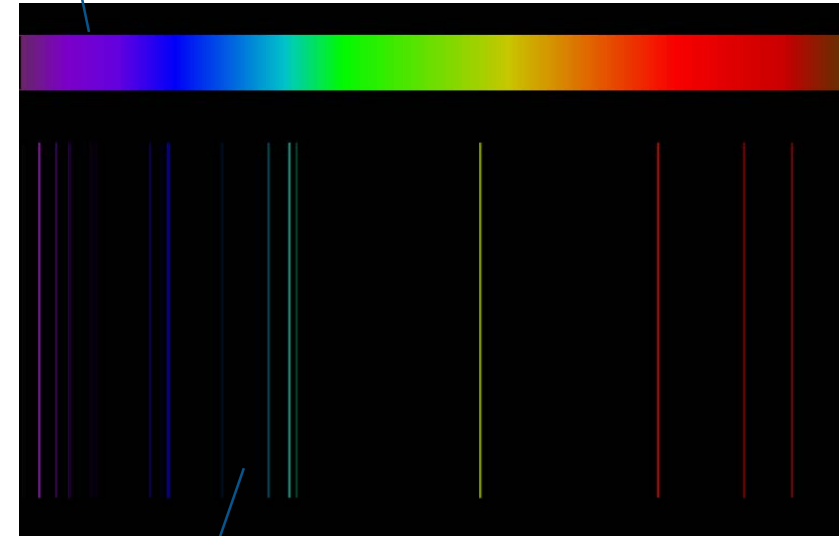


Electricity is run through a glass tube containing Helium. The electricity excites the atoms of gas, which emit light as their electrons fall back to their ground states.



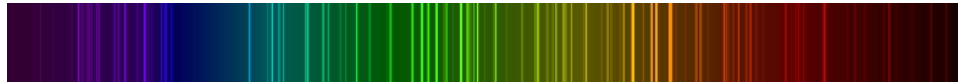
Glasses with diffraction gratings for lenses split up the light into its separate colors

Through a diffraction grating, white light looks like an entire rainbow.



The excited gas emits light at specific wavelengths that we can see as lines of specific colors.

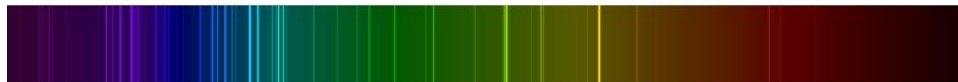
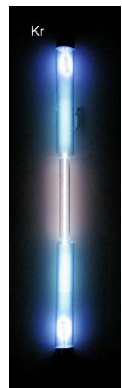
Different Elements Emit Light of Different Wavelength, Their Spectra Look Different



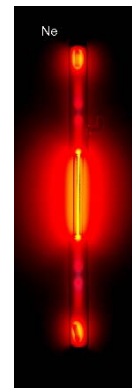
Xenon



Argon



Krypton



Neon

Comparing Spectral Lines

Which elements are likely present in the unknown object?

Hydrogen and Mercury

