

# Electron Arrangement in Atoms

Or Chicken Feet Quantum Numbers

General Chemistry Teaching Unit

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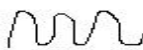
Preface: Electron arrangement in atoms is new material and initially confusing for students. Dr. B.D. Palmer of Henderson State University is credited for making it interesting, easy, and fun. The “chicken feet” method of teaching quantum numbers and electron configuration is a different, unusual approach utilized by Dr. Palmer to simplify the model. Likely it is the only new technique presented, but the entire unit is included. There are tidbits that may have escaped being written here. Many places where the Periodic Table is utilized is not defined. Any teacher using these ideas should develop to suit his/her style and adapt the speed at which it is presented.

Goals: The student will:

1. Gain a better understanding of the electromagnetic spectrum;
2. Learn the range of visible light wavelengths;
3. Recognize the mathematical relationship between wavelength and frequency;
4. Learn to calculate the energy of a photon;
5. Learn a sample of characteristic colors of elements;
6. Learn the meaning of quantum numbers and become adept at writing them;
7. Learn to write electron configurations, orbital notations, noble gas configurations and the rules that govern writing these;
8. Have an understanding of how electrons are arranged in atoms and the significance of electron arrangement in order to prepare them for periodicity, formula writing, and additional chemistry concepts.

Day 1.

Light travels in two ways: waves



and packets



Draw a wave and point out wavelength



and define frequency,  $\nu$ .



Discuss the mathematical relationship between



