

**Background:** This is the week you've all been waiting for. This is the week where I use the phrase Quantum Leap without irony or reference to the (excellent) show from the 80s.

One amazing thing about our subject is that we knew some things before others. For example, in the 1800's we knew that things were made of atoms, and that atoms had periodic properties that could be summarized neatly on a table. Both of those are universal truths that were known without actually knowing how those atoms were structured. At this point all we knew was that their dense part was on the inside and that electrons were on the outside.

In the early 1900's some people really started to explore the electronic structure of the atom. It turns out that electrons were really challenging things to study. Some anomalous findings challenged some central ideas of physics. This exploration of the electron was going on around the same time that Europe was descending in to its second world war. Some alliances really tested scientific relationships.

After a couple decades worth of work, we arrive at a model of the atom that is not explicitly know-able. There are, however, some assumptions that make sense, and we will learn about those.

This is a fascinating period in chemistry and in world history. The fact that they are intertwined will make you a very interesting dinner part guest.

**Objectives:**

1. Determine the wavelength, frequency, and energy for any portion of the electromagnetic spectrum.
2. Discern between the classical and quantum model of the atom.
3. Describe orbitals as probability maps.
4. Determine the electron configuration of any atom in the first five rows of the periodic table.

**Reading:** Zumdahl Chapter 11