**Biography Alex,Philip,Luke**

Niels Henrik David Bohr was born in Copenhagen, Denmark on October 7th, 1885. His father was a professor of Physiology at Copenhagen University and his mother came from a family distinguished in the field of education. This created a picture perfect atmosphere for the development of Niels Bohr`s genius. He followed his dad’s footsteps and attended the Copenhagen University after graduating from Gammelholm Grammar School in 1903. He later on graduated from the school and earned his Master's degree in Physics in 1909. Also, he got his Docter`s degree in 1911. He first showed glimpse of his brilliance in 1908 when he came up with a solution to a problem which the Academy of Sciences in Copenhagen presented to the public and won a gold medal. In the spring of 1912, he worked at Professor Rutherford`s laboratory in Manchester studying the radioactive phenomena. Only a year earlier, Professor Rutherford discovered the nucleus of the atom. With the discovery by Rutherford, Bohr found interest in the study of the atomic structure with the idea of atomic nucleus being its basis. With the basis of atomic nucleus combined with concepts borrowed from the Quantum Theory established by Max Planck, he successfully came up with a picture of a structure of an atom. In 1922, he won the Nobel Prize for his work on atomic structure. Until his death on the November 18th, 1962, Bohr constantly plunged into different areas in science and his faculty of wonder made him a greatly respected man.

**Background of the Bohr Model:**

In the late 1800's to the early 1900's the new idea of electrical nature of atoms was discovered which lead to various theories of atomic models. Ernest Rutherford made a model of an atom which the electrons orbited the nucleus how planets orbit in a solar system. The problem with Rutherford's model was that if his interpretations were so, then his model was unstable. With the Bohr model of the hydrogen atom, the findings of the hydrogen atom's energy and radiation of electromagnetic waves found error of Rutherford's model of Hydrogen atoms.

However, Bohr’s model proves to be incorrect as it only works for one atom with one electron such as hydrogen. Quantum mechanics has basically replaced Bohr’s model.

**Main Points:**

The Bohr model shows that electrons in atoms are in orbits of different amounts of energy around the nucleus.

The term energy levels (or shells) are used to describe these orbits of differing energy. The energy of an electron is quantized, meaning electrons can have one energy level or another but nothing in between.

The energy level an electron normally occupies is called its ground state. But it can move to a higher-energy, less-stable level, or shell, by absorbing energy. This higher-energy, less-stable state is called the electron’s excited state.

After it’s done being excited, the electron can return to its original ground state by releasing the energy it has absorbed..

Sometimes the energy released by electrons occupies the portion of the electromagnetic spectrum (the range of wavelengths of energy) that humans detect as visible light. Slight variations in the amount of the energy are seen as light of different colors.

**How Bohr came up with his model:**

When Niels Bohr began thinking about the atom and atomic spectra in general, he was aware of the wave-particle duality of light that had just been discovered. He knew that a specific wavelength (or color) of light was related to the light's energy. As a result, Bohr realized that the lines of color appearing in an element's atomic spectrum corresponded not only to those wavelengths of light but also, to the specific frequencies and, more importantly, to the specific energies of light. The important question, then, was why the atoms were only emitting light at very specific energies. Niels Bohr realized that this unusual result could be explained by proposing what he termed energy levels.

5 questions:

Why does Bohr’s model not work for any other element than hydrogen?

Bohrs model doesn’t work because it treats electrons with the laws of classical physics. These laws only apply to larger objects. Since electrons are quantum objects, they are treated with quantum physics.

What does quantized mean in terms of electrons?

Let’s picture a stair case. There are no steps between one step on top of another. This relates to electrons orbiting a nucleus. There are certain discrete "steps" or energy levels in an atom, and an electron can only exist at one of these levels. It cannot exist anywhere in between any of the levels. So, an electron can only have certain amounts of energy.

Which energy levels have the most energy?

Typically, the farther out electrons are from the nucleus, the more energy they have.

What is ground state?

Ground state is the lowest allowed energy state of an atom, molecule, or ion. If you were to look at a light spectrum, the colour closest to Red would be the ground state.

What is the difference between Bohr’s model and the modern model?

In Bohr's Model, the electrons are orbiting in a perfect circle around the center of the atom on their orbital plane. In the Modern model, quantum mechanics applies and the electrons are moving in a random probability based direction at all times.

**Bibliography**

https://sites.google.com/site/projectonthebohrmodel/home/the-main-points-of-the-bohr-model

http://www.dummies.com/how-to/content/atomic-structure-the-bohr-model.html

http://www.physicsforums.com/showthread.php?t=306485

http://www.nobelprize.org/nobel\_prizes/physics/laureates/1922/bohr-bio.html

http://en.wikipedia.org/wiki/Ground\_state