Worksheet 2.2.

DISCOVERING THE STRUCTURE OF THE ATOM

Chemistry, Grade X, Chapter 2. Inside an Atom
First Semester, SMA Budi Mulia Dua Yogyakarta

Full Name :

Class :

4. Bohr's Atomic Theory

1. Play the video and fill in the blank by dragging a word from the boxes provided.

Click to see the original video

orbit	higher	energy levels	quantum	lower	shells	between	quantized

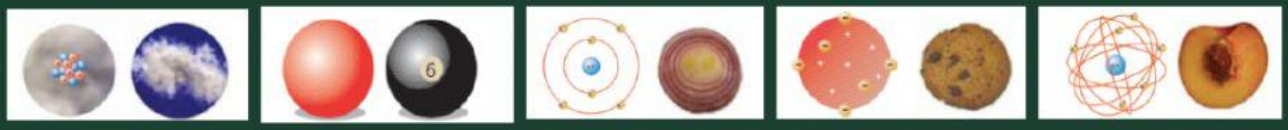
In 1913, Danish physicist, Neils Henrik David Bohr, conclude that electrons in the atom move in circular _____. They're never in energy levels or energy shell. In other words, the electron is _____. As the orbits get further from the nucleus they have more_____. When an electron absorbs energy, it jump to a _____orbital. An electron in an excited state can release energy and fall to a _____ orbital.

2.

Base on the behavior of electron inside an atom, try to explain why do metals glow when heated?

2. Which part of Rutherford's atomic theory was disproved by Bohr's experiment?

4. Which one of the following pictures is the Bohr model ? (click your answer on the picture)



(a) (b) (c) (d) (e)

5. Modern / Quantum Mechanical Theory of Atom

Again, we still have a problem with the electron inside the atom. Bohr's atomic theory only work for hydrogen atom because it considers only the interactions between one electron and nucleus. If there is/are any other electron(s) in the atom, it will repel the other electron and change energy level. Therefore, modern atomic theory tried to fix the new arrangement of the electron.

1. In 1927, Davison and Germer demonstrated double slit experiment to the electron. Play the experiment below!

Base on the video, how is electron behave?

click here to see the original video

2. fill in the blank with drag a word from the boxes provided.

orbital	uncertainty	position	circular	wave

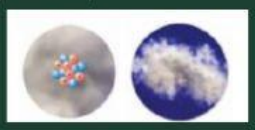
In 1924, using a mathematical equation, a French Physicist, Louis de Broglie proposed that particle (electron) could behave as particle and _____ (wave-particle duality). In 1927, Davisson and Germer conducted a double-slit experiment, confirming de Broglie's idea. The double-slit experiment shown that electrons did not travel in a _____ path, as Bohr suggested. Electrons travel like a wave so that the _____ of electrons is difficult to determine.

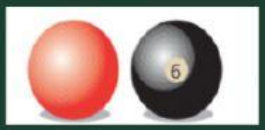
Base on de Broglie's idea, Austrian Physicist, Erwin Schrödinger, predicted the position of the electron mathematically. Schrödinger's equation yield an area of the electron that is likely to be. This area is called an electron cloud or an_____. Some regions of the electron cloud are denser than others. The denser regions are areas where electrons are most likely to be.

Heisenberg's principle of _____ tells the same thing. This Principe tells us that it is impossible to know the position and momentum of the particle (electron).

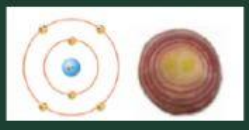
3. Can you imagine the quantum mechanical model of atom? To help you understanding this concept, please open MEL CHEMISTRY VR and choose atom structure or click this link.

4. Which one of the following pictures is the modern atomic model ? (click your answer on the picture)


(a)



(b)


(c)


(d)


(e)

5. Which part of Bohr's atomic theory was disproved by quantum mechanical model of atom?

This is the end of your journey, Discovering atomic structure. Do you learn something from the history of atomic structure? Please join in online meeting to discuss your answer with your friends and me (Ms. Lia).

Quote:
"We must be clear that when it comes to atoms, language can only be used as in poetry." —Niels Bohr