

Name: _____ Per _____

History of Atomic Theory

Directions: After watching the History of Atomic Theory Video, and reading the back of this worksheet, complete the following table.

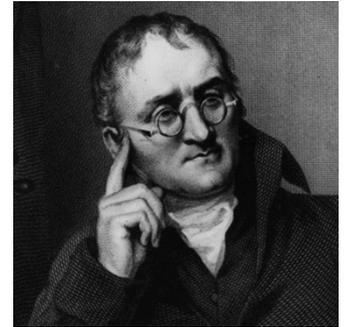
Who	What	When	Discovered	Their Experiment	Picture	What's wrong or missing?
Philosopher Democratis	<i>Thought about matter</i>	<i>BC</i>	/	None	/	<i>Since there were no experiments conducted, he had no proof to support his claim.</i>
Dalton						
Thomson						
Rutherford						
Bohr						
Chadwick						

History of the Atomic Theory

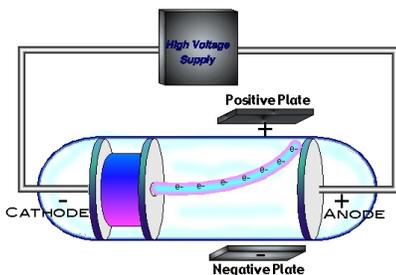
John Dalton (1766 – 1844):

John Dalton was an English chemist. His ideas form the atomic theory of matter. Here are his ideas.

- All elements are composed (made up) of atoms. It is impossible to divide or destroy an atom.
- All atoms of the same elements are alike. (One atom of oxygen is like another atom of oxygen.)
- Atoms of different elements are different. (An atom of oxygen is different from an atom of hydrogen.)
- Atoms of different elements combine to form a compound. These atoms have to be in definite whole number ratios. For example, water is a compound made up of 2 atoms of hydrogen and 1 atom of oxygen (a ratio of 2:1). Three atoms of hydrogen and 2 atoms of oxygen cannot combine to make water.



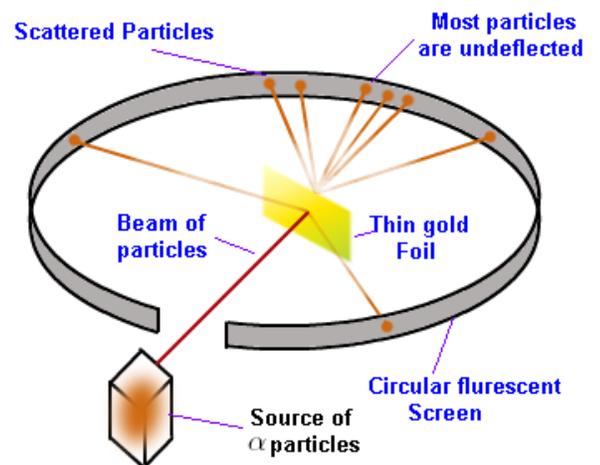
J. J. Thompson (Late 1800s):



J. J. Thompson was an English scientist. He discovered the electron when he was experimenting with gas discharge tubes. He noticed a movement in a tube. He called the movement cathode rays. The rays moved from the negative end of the tube to the positive end. He realized that the rays were made of negatively charged particles – electrons.

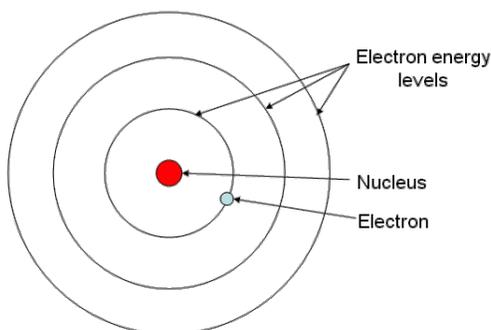
Lord Ernest Rutherford (1871 – 1937):

Ernest Rutherford conducted a famous experiment called the gold foil experiment. He used a thin sheet of gold foil. He also used special equipment to shoot alpha particles (positively charged particles) at the gold foil. Most particles passed straight through the foil like the foil was not there. Some particles went straight back or were deflected (went in another direction) as if they had hit something. The experiment shows:



- Atoms are made of a small positive nucleus; positive nucleus repels (pushes away) positive alpha particles
- Atoms are mostly empty space

Niels Bohr (Early 1900s):



Niels Bohr was a Danish physicist. He proposed a model of the atom that is similar to the model of the solar system. The electrons go around the nucleus like planets orbit around the sun. All electrons have their energy levels – a certain distance from the nucleus. Each energy level can hold a certain number of electrons. Level 1 can hold 2 electrons, Level 2 - 8 electrons, Level 3 - 18 electrons, and level 4 - 32 electrons. The energy of electrons goes up from level 1 to other levels. When electrons release (lose) energy they go down a level. When electrons absorb (gain) energy, they go to a higher level.