1700´s

1. The **phlogiston theory** (from the [Ancient Greek](http://www.wikipedia.org/wiki/Ancient_Greek) φλογιστόν *phlŏgistón* "burning up", from φλόξ *phlóx* "fire"), first stated in 1667 by [Johann Joachim Becher](http://www.wikipedia.org/wiki/J._J._Becher), is an [obsolete scientific theory](http://www.wikipedia.org/wiki/Obsolete_scientific_theory) that postulated the existence of a fire-like element called "phlogiston", which was contained within combustible bodies and released during [combustion](http://www.wikipedia.org/wiki/Combustion). The theory was an attempt to explain processes such as [combustion](http://www.wikipedia.org/wiki/Combustion) and the [rusting](http://www.wikipedia.org/wiki/Rust) of metals, which are now understood as [oxidation](http://www.wikipedia.org/wiki/Redox). The theory holds that all [flammable](http://www.wikipedia.org/wiki/Flammable) materials contain phlogiston, a substance without [color](http://www.wikipedia.org/wiki/Color), [odor](http://www.wikipedia.org/wiki/Odor), [taste](http://www.wikipedia.org/wiki/Taste), or [mass](http://www.wikipedia.org/wiki/Mass) that is liberated in burning. Once burned, the "dephlogisticated" substance was held to be in its "true" form, the [calx](http://www.wikipedia.org/wiki/Calx" \o "Calx). "Phlogisticated" substances are those that contain phlogiston and are "dephlogisticated" when burned
2. Charles Coulomb comes up with Coulomb´s Law: Relates the force between two electrical charges. The law states that the closer two electrical charges are to each other, the stronger the force is between them

1774- 1794

1. Joseph Priestley- Discovered oxygen by heating the calx (ash) of mercury, collecting a colorless gas and burning different substances in this colorless gas.
2. Antoine Lavoiser- disproved the phlogiston theory by realizing that oxygen combined with substances as they burned. Lavoiser is considered to be the “Father of modern chemistry”

1803

1. Dalton´s Atomic Theory- Dalton´s theory states that:

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| --- |
| 1) All matter is made of atoms. Atoms are indivisible and indestructible.  2) All atoms of a given element are identical in mass and properties  3) Compounds are formed by a combination of two or more different kinds of atoms.  4) A chemical reaction is a***rearrangement*** of atoms. |

Modern atomic theory is, of course, a little more involved than Dalton's theory but the essence of Dalton's theory remains valid. Today we know that atoms can be destroyed via nuclear reactions but not by chemical reactions. Also, there are different kinds of atoms (differing by their masses) within an element that are known as "isotopes", but isotopes of an element have the same chemical properties.

1854

1. Heinrich Geissler: Creates the 1st vacuum tube

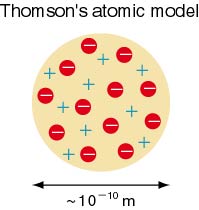
1879

1. William Crockes: Made headway in modern atomic theory when he used the vacuum tube made by Heinrich Geissler to discover cathode rays. Crookes created a glass vacuum tube which had a zinc sulfide coating on the inside of one end, a metal cathode imbedded in the other end and a metal anode in the shape of a cross in the middle of the tube. When electricity was run through the apparatus, an image of the cross appeared and the zinc sulfide glowed. Crookes hypothesized that there must have been rays coming from the cathode which caused the zinc sulfide to fluoresce and the cross to create a shadow and these rays were called cathode rays.

1885

1. The proton- Eugene Goldstein discovered positive particles by using a tube filled with hydrogen gas. The positive particle had a charge equal and opposite to the electron. It was named: proton

1895

1. X rays. Wilhelm Roentgen accidentally discovered x-rays while researching the glow produced by cathode rays. Roentgen performed his research on cathode rays within a dark room and during his research, he noticed that a bottle of barium platinocyanide was glowing on a shelf. He discovered that the rays that were causing the fluorescence could also pass through glass, cardboard and walls. The rays were called x-rays

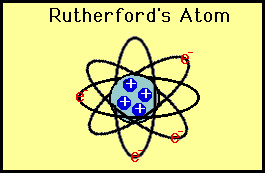
1897

1. J.J. Thomson placed the Crookes´tube within a magnetic field. He found that the cathode rays were negatively charged. He concluded that all atoms have this negative charge and he renamed the cathode rays electrons. His model of the atom showed a sphere of positively charged material with negative electrons stuck in it.
2. Marie Curie discovered radioactive elements like uranium, thorium, radium and polonium.

1909

1. Robert Millikan discovered the mass of an electron by introducing charged oil droplets into an electrically charged field.

1911

1. Ernest Rutherford discovered three types of radioactivity: alpha particles (+), beta particles (-) and gamma rays (neutral). Created an atomic model different to Thomson´s

1932

1. James Chadwick discovers the neturon
2. Enrico Fermi- discovered nuclear fission. Considered to be the father of the atomic bomb

1934

1. Irene Curie and Frederic Joliot-Curie discovered that radioactive elements could be reated artificially in the lab with the bombardement of alpha particles on certain elements

1940´s

1. Manhattan Project: The US developed the first working nuclear fission reactor (atomic bomb)