

# Essay on structure of the atom

[Science](#), [Physics](#)



Joseph John Thompson is credited with the discovery of the electron. This was as a result of an experiment he conducted in 1897. Thomas discovered that Cathode rays, which were discovered by Philipp Lenard, could travel a lot further through air than is expected for a particle as small as an atom. Thomas first produced cathode rays and passed them to a bell jar. Here, they were deflected by a magnet. The path of the rays was detected by their fluorescence on a screen placed in the bell jar. He performed this experiment with different materials as the anode and with different gases in the jar and got the same result, concluding that the rays were the same no matter their origin. (Lee Buescher 2012) Thompson went on to determine that the cathode rays had an electrical charge by connecting an electrometer to the previous set up and only recording a reading when the cathode rays were deflected by the magnet. Another experiment was performed to determine if the cathode rays could actually be deflected by an electric field. (Lee Buescher 2012). He did this by constructing a tube with a vacuum and directing the cathode rays through a metal slit which served as the anode. This was passed through a pair of aluminum plates which were connected to a battery. He then noticed that the beam was skewed to a side of the screen placed in front of the beam and when the poles of the battery were reversed, the skewness was also reversed. It is known as the plum-pudding model of the atom. (Lee Buescher 2012).

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angle to the source of the particle. Some of the particles were even reflected back on the source of the alpha particle meaning that they backfired.

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The beam of alpha particles was generated by a decaying radioactive element, Radon. The alpha particle was directed onto a thin gold foil in a chamber devoid of air. A detector was used. It was made of zinc sulphide screen at the focus of a microscope. The result of the experiment showed that the Thompson model of the atom was incorrect. It showed that the mass of an atom was concentrated at the center, which he called the nucleus of the atom. It also contains a positive charge, so the reason why the alpha particles were deflected from it, since they were also positively charged. Several atomic models were proposed before the end of the classic era. However, one of the later models to be proposed was the one by Neil Bohr. The model assumes an atom to be a positively charged nucleus surrounded by electrons that orbit the nucleus in a fashion depicting the way the

planets in our solar system orbit around the sun, with the sun being the nucleus and the planets being the electrons.

## **References**

Lee Buescher (2012). Atomic structure Timeline. Accessed on 29th February, 2012 from <http://atomictimeline.net/index.php>

Skull in the Stars (2008). The Gallery of failed atomic models 1903-1913. Accessed on 20th February 2012 from <http://skullsinthestars.com/2008/05/27/the-gallery-of-failed-atomic-models-1903-1913/>