History of the Atom

In the 5th century BCE, ancient Greek philosopher Democritus thought that matter was made from tiny particles called atoms. In 1803, British chemist John Dalton suggested that each element is made of different atoms, based on the way different gases react with one another.

Key Facts

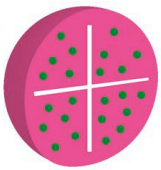
- ✓ **The concept of atoms dates from around 500 BCE in ancient Greece.**
- ✓ **Ideas about what atoms are made of have changed over time.**
- ✓ **Scientists including John Dalton, J.J. Thomson, Ernest Rutherford, Neils Bohr, James Chadwick, and many others contributed to how atoms are understood.**

Changing atom models

Scientists created many different models of how atoms were structured. Over time, these models were revised and updated by other scientists.

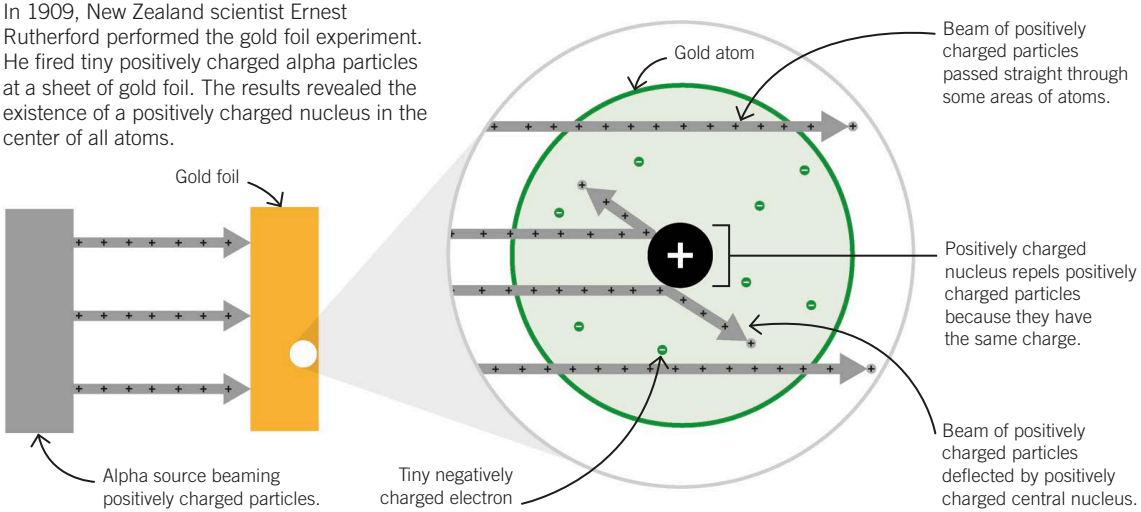
1. Spherical model
The first model of the atom was theorized by John Dalton in 1803. Dalton suggested atoms were solid particles that could not be divided into smaller parts.

2. Plum pudding model
J.J. Thomson discovered electrons in 1904. He suggested the Plum pudding model, in which negatively charged electrons are embedded in a positively charged ball.

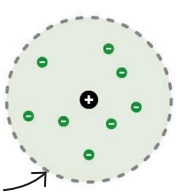


The gold foil experiment

In 1909, New Zealand scientist Ernest Rutherford performed the gold foil experiment. He fired tiny positively charged alpha particles at a sheet of gold foil. The results revealed the existence of a positively charged nucleus in the center of all atoms.



3. Nuclear model
Ernest Rutherford proposed an atomic model of a positive nucleus in the center of a scattered cloud of electrons. He later discovered the proton as the positive charge in the nucleus.



4. Modern nuclear model
Neils Bohr found that electrons orbit the nucleus. Later, James Chadwick discovered neutral (no charge) neutrons in the nucleus. This led to the latest atomic model used today.