

Lesson 3

Chemistry 0

Fall 2021, L. Tracey Gao



Review our homework

Atom Quiz

The Structure of the Atom

- An **atom** is the smallest particle of an element that retains the chemical properties of that element.
- The **nucleus** is a very small region located at the center of an atom.
- The nucleus is made up of at least one positively charged particle called a **proton** and usually one or more neutral particles called **neutrons**.

The Structure of the Atom, *continued*

- Surrounding the nucleus is a region occupied by negatively charged particles called *electrons*.
- Protons, neutrons, and electrons are often referred to as *subatomic particles*.

Discovery of the Electron

Cathode Rays and Electrons

- Experiments in the late 1800s showed that cathode rays were composed of negatively charged particles.
- These particles were named *electrons*.

Discovery of the Electron

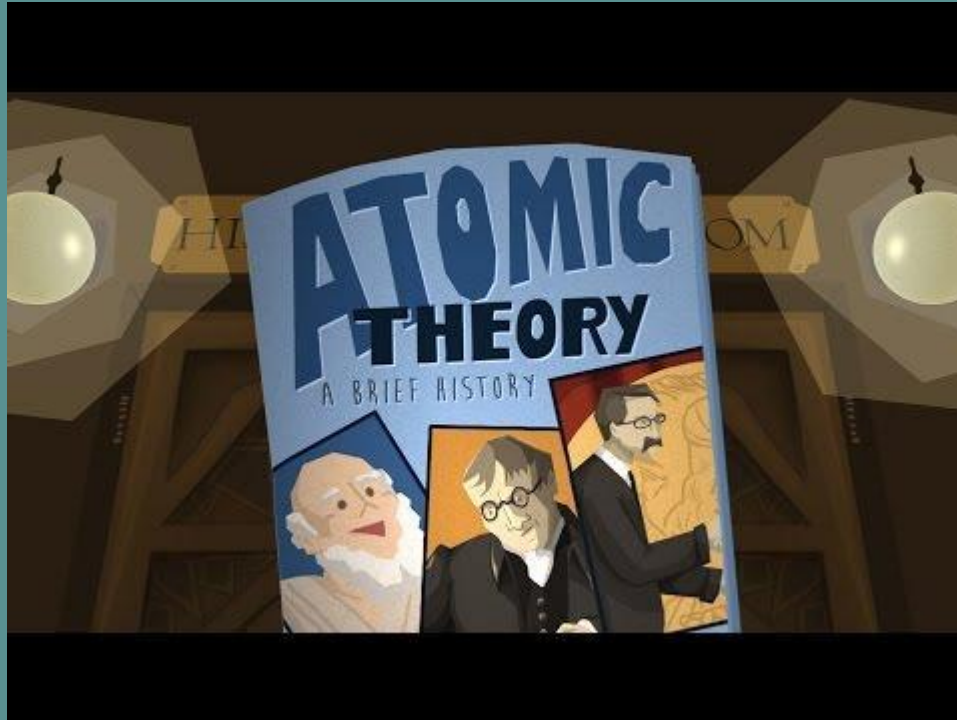
Charge and Mass of the Electron

- Joseph John Thomson's cathode-ray tube experiments measured the charge-to-mass ratio of an electron.
- Robert A. Millikan's oil drop experiment measured the charge of an electron.
- With this information, scientists were able to determine the mass of an electron.

Discovery of the Atomic Nucleus

- More detail of the atom's structure was provided in 1911 by Ernest Rutherford and his associates Hans Geiger and Ernest Marsden.
- The results of their **gold foil experiment** led to the discovery of a very densely packed bundle of matter with a positive electric charge.
- Rutherford called this positive bundle of matter the *nucleus*.

~ 2,400-year search for the Atom!





This Week's Homework

- Prepare 2-3 slides of facts about one element (from Elements 1-20)
- Your slides should include:
 - Atom name
 - Atomic number
 - when and where discovered
 - natural sources of the element
 - major uses
 - any other information you find important or fun

Random Number Generator
(1-20)