ROSEDALE ACADEMY

Lesson 1-1: Rutherford's Gold Foil Experiment Simulator

Instructions:

1. Click on the simulator in the lesson or use the link below and click on the "Run" button to begin
   Link: https://phet.colorado.edu/en/simulation/rutherford-scattering
2. Answer the questions below:

Part 1: Plum Pudding Atom

Instructions:

I. Click on the tab at the top marked "Plum Pudding Atom"
II. Click on the red button marked "O" on the gun
III. Answer the following questions:

a) What do the following particles in the simulator represent:
   i) Purple dot:
   ii) Red dot:
   iii) Grey dot:

b) The red and grey particles fired from the gun are called alpha particles; they are made up of 2 protons and 2 neutrons, what is the charge of an alpha particle?

c) Describe the path of the alpha particles as they pass through the plum pudding atom (click on the "show traces" box on the right to help with this)?

Part 2: Rutherford Atom

Instructions:

I. Click on the tab at the top marked "Rutherford Atom"
II. Click on the red button marked "O" on the gun
III. Click on the box marked "Show Traces" on the right
IV. Answer the following questions:

a) The ball at the center of the atom represents the nucleus of the atom. What happens to the alpha particles that come closest to the nucleus?

b) Why do you think the alpha particles react this way as they pass close to the nucleus?

c) **Bonus Question:** As you see on the right, the atom we are looking at has 79 protons and 118 neutrons, what element is this atom made of?