

HOMEWORK PROBLEM:

3a. What unexpected result did Rutherford's gold foil experiment produce? Explain why this result was so significant.

Answer:

Rutherford was trying to support Thomson's model of the atom by performing this experiment. When the alpha particles (helium atoms with no electrons) were "fired" at the sheet of gold, he expected most of the alpha particles to pass through the foil or have a few particles slightly deflect off of one of the subatomic particles (proton or electron). What was not expected was having the alpha particles deflect back toward the source. The model of the atom was then revised to concentrate all the sub-atomic particles into a centrally located space (nucleus).

3b. Describe the difference in the JJ Thomson's model of the atom and Rutherford's model. In your description, be sure to give details of Thompson's model and give details of Rutherford's model.

Answer:

Thomson's model of the atom (plum-pudding pie model) had the sub-atomic particles (protons and electrons) scattered throughout the atom. Rutherford's model took the sub-atomic particles (protons) and placed them into a centrally located nucleus, and the electrons "flew around" the nucleus like bees around a hive.