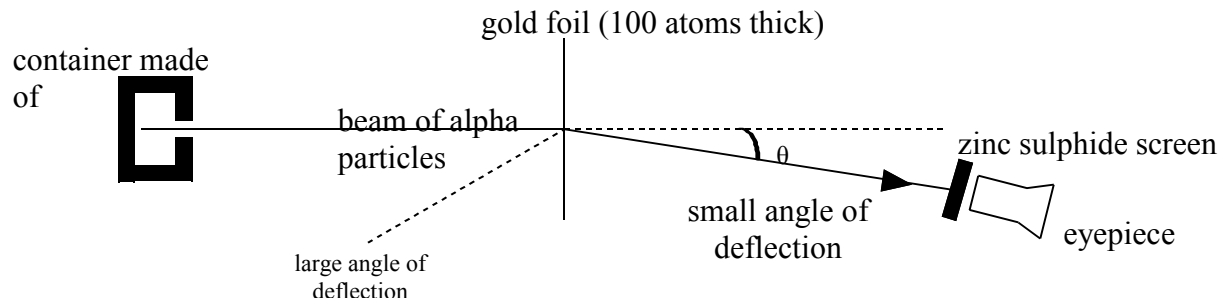


NUCLEAR REACTIONS

Rutherford's experiment

This confirmed that atoms have a central nucleus where most of the atom's mass is contained.



When alpha particles hit the zinc sulphide screen flashes of light were produced (scintillations) which could be viewed using the eye piece.

MAIN RESULTS

- 1

| |
|-------------------------|
| Most / A few / Very few |
|-------------------------|

 alpha particles passed straight through the foil with little or no deviation.
- 2

| |
|-------------------------|
| Most / A few / Very few |
|-------------------------|

 alpha particles deviated through angles up to 90°
- 3

| |
|-------------------------|
| Most / A few / Very few |
|-------------------------|

 alpha particles deviated through angles of more than 90° (ie they bounced back)

CONCLUSION

- 1 Even though each alpha particles had to pass by 100 atoms of gold to get through the foil, most had little/no deviation. Therefore, most of the atom must be _____
_____.
- 2 Some alpha particles did bounce back. So, most of the atom's mass must be concentrated in a very small volume (called the nucleus). This must also contain all the positive charge.
If conclusion 2 were untrue, what would have changed about Rutherford's results?

Rutherford's Model of the Atom

- 1 The nucleus has a relatively _____ diameter compared with that of the whole atom.
- 2 Most of the mass of one atom is concentrated in the _____.

