

Question 12d.

The diagram shows a simplified arrangement of an experiment carried out early in the 20th century to investigate the structure of the atom.



Name the scientist who carried out this experiment

Describe what was observed in this experiment.

Why was it necessary to carry out this experiment in a vacuum?

What conclusion did the scientist form about the structure of the atom?

Name the scientist who carried out this experiment.

Ernest Rutherford.

Describe what was observed in this experiment.

The alpha particles were observed to strike the ZnS screen at all locations on the screen. Most passed straight through the foil but some were deflected through various angles, even backwards along their incident path..

Why was it necessary to carry out this experiment in a vacuum?

Alpha particles have a very short range and are easily absorbed by a couple of centimetres of air, hence the air had to be removed.

What conclusion did the scientist form about the structure of the atom?

He concluded that atoms were mostly empty space with the vast bulk of their mass concentrated at a positively charged center.