

Q11: Choose a suitable solution to the given statements which justify the difference between Thomson's model and Rutherford's model

(a) In the case of scattering of alpha particles by a gold foil, average angle of deflection of alpha particles stated by Rutherford's model is (less than, almost the same as, much greater than) stated by Thomson's model.

(b) Is the likelihood of reverse scattering (i.e., dispersing of α -particles at points more prominent than 90°) anticipated by Thomson's model (considerably less, about the same, or much more prominent) than that anticipated by Rutherford's model?

(c) For a small thickness T, keeping other factors constant, it has been found that amount of alpha particles scattered at direct angles is proportional to T. This linear dependence implies?

(d) To calculate average angle of scattering of alpha particles by thin gold foil, which model states its wrong to skip multiple scattering?

Solution:

(a) almost the same

The normal point of diversion of alpha particles by a thin gold film anticipated by Thomson's model is about the same as from anticipated by Rutherford's model. This is on the grounds that the average angle was taken in both models.

(b) much less

The likelihood of scattering of alpha particles at points more than 90° anticipated by Thomson's model is considerably less than that anticipated by Rutherford's model.

(c) Dispersing is predominantly because of single collisions. The odds of a single collision increment linearly with the amount of target molecules. Since the number of target particles increment with an expansion in thickness, the impact likelihood depends straightly on the thickness of the objective.

(d) Thomson's model

It isn't right to disregard multiple scattering in Thomson's model for figuring out the average angle of scattering of alpha particles by a thin gold film. This is on the grounds that a solitary collision causes almost no deflection in this model. Subsequently, the watched normal scattering edge can be clarified just by considering multiple scattering.