

**29** When  $\alpha$ -particles are directed at gold leaf:

1. almost all  $\alpha$ -particles pass through without deflection
2. a few  $\alpha$ -particles are deviated through large angles.

What are the reasons for these effects?

	1	2
<b>A</b>	most $\alpha$ -particles have enough energy to pass right through the gold leaf	gold is very dense, so a few low energy $\alpha$ -particles bounce back from the gold surface
<b>B</b>	most $\alpha$ -particles miss all gold atoms	a few $\alpha$ -particles bounce off gold atoms
<b>C</b>	the gold nucleus is very small so most $\alpha$ -particles miss all nuclei	occasionally the path of an $\alpha$ -particle is close to a nucleus
<b>D</b>	the positive charge in an atom is not concentrated enough to deflect an $\alpha$ -particle	occasionally an $\alpha$ -particle experiences many small deflections in the same direction