## **Chemical Reactions**

- Atoms change electrons configurations (gain, lose, share) in order to obtain configuration of a noble gas (stable)
- Rearrangement of atoms
- Can be affected by changing temperature, pressure or by adding a catalyst

$$2NH_{3} + \frac{7}{2}O_{2} - 32NO_{2} + 3H_{2}O$$

$$\frac{23}{92}U - 30Th + \frac{4}{2}He + \frac{1}{2}P^{\dagger}$$

$$\frac{14}{92}P^{\dagger} - \frac{1}{2}P^{\dagger} - \frac{1}{2}P^{\dagger}$$

$$\frac{1}{1.5}P^{\dagger}$$

$$\frac{1}{1.5}P^{\dagger}$$

$$\frac{1}{1.5}P^{\dagger}$$

## Alpha Radiation

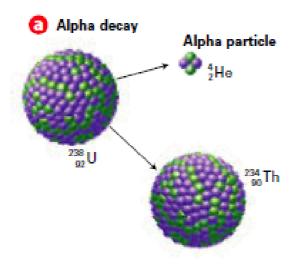
Radiation consisting of helium nuclei that have been emitted from a radioactive source.

$$^{238}_{92}$$
U  $\xrightarrow{\text{Radioactive}}$   $^{234}_{90}$ Th +  $^{4}_{2}$ He ( $\alpha$  emission)

Uranium-238 Thorium-234 Alpha particle

Balanced equation?

Size and charge (++) cause the particle to be not very penetrating.



## Beta Radiation

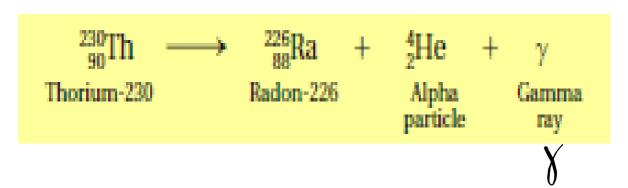
An electron resulting from the breaking apart of a neutron into a proton and electron.

Because beta particles have less mass and less charge than alpha particles, making them more penetrating.

1H Ipt On

## Gamma Radiation

A high-energy photon that is emitted from a radioisotope. These are often emitted along with alpha and beta particles.  $\propto \beta \ \%$ 



Because gamma rays have no mass and no charge, they are extremely penetrating and damaging.

p. 802 #1-6