

Radiation

Write down your own opinion of Nuclear Energy.
Should we use it? Is it safe?

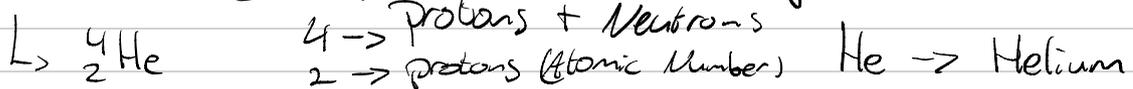
Important:

Radiation: Radioactive material emits radiation, beams of nuclear energy.

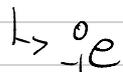
Radioactivity: The amount of nuclear energy particles that are been emitted every second.

Types of Radiation:

α - Radiation (Alpha): Radiation consisting of a Helium Nuclei



β - Radiation (Beta): Radiation consisting of electrons

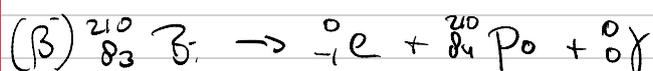
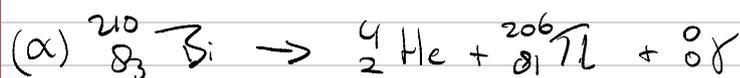
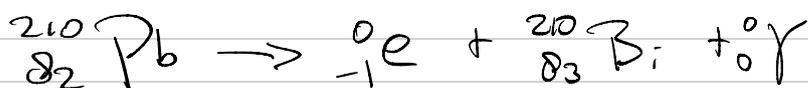
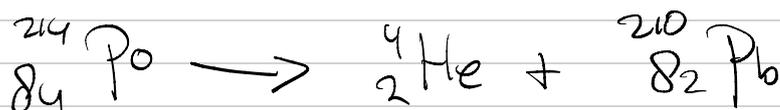
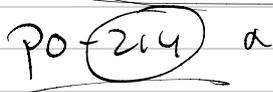
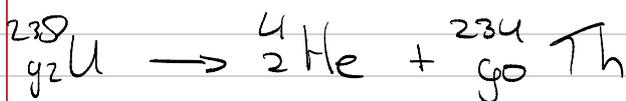


γ - Radiation (Gamma): Gamma Radiation

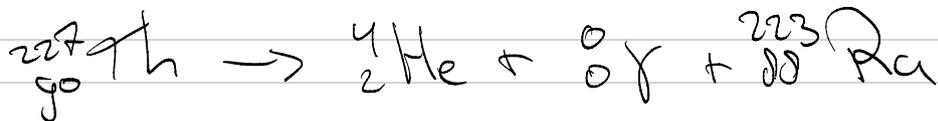
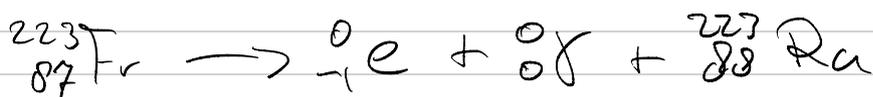
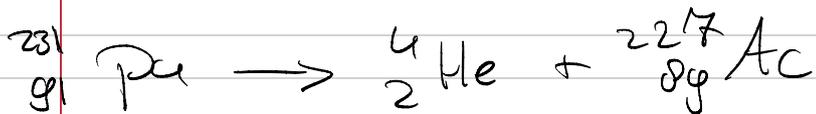
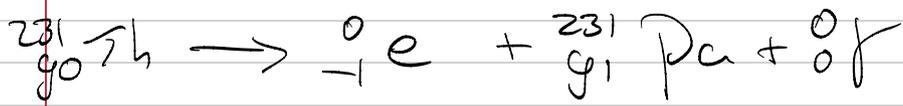
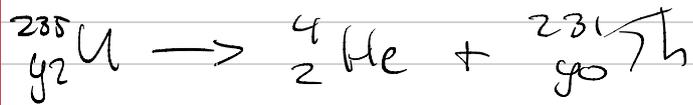


Dangerous!

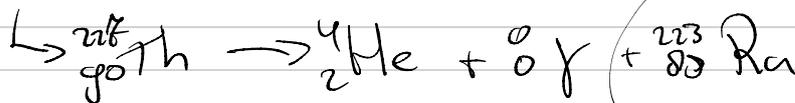
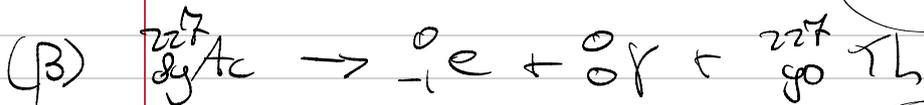
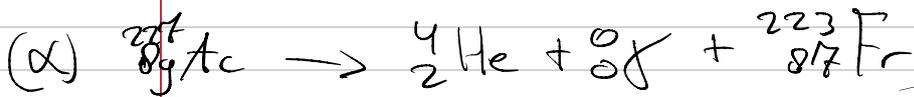
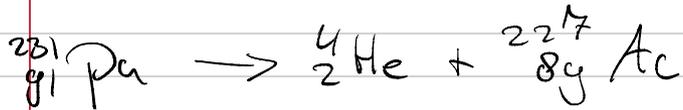
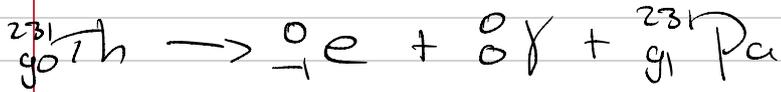
Not but still Dangerous



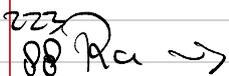
Noteer de verdrreeks van Uranium-235 tot je bij Radium uit komt.



Write down the Nuclear reaction chain of Uranium-235
 Stop at Radium. If you see α and β radiation,
 do both of them.



b.) Continue this series until you reach a stable isotope.
 It can not decay anymore.

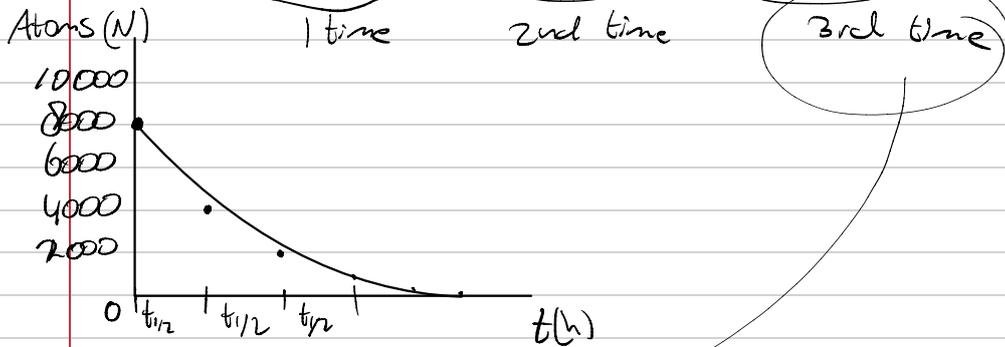


If you are done; make questions 30, 31, 33, 34, 35

Half-Decay time

Definition: The time that it takes for the total amount of atoms to decay half the amount.

100% → 50% → 25% → 12,5% → ...



$$t = t_{1/2} \cdot n$$

t = total time that it takes to decay to a certain amount
 $t_{1/2}$ = Half-decay time in seconds (see isotope table)
 n = amount of times the decay happens.

If 10h is the $[t_{1/2}]$ and it happens 4 times

$$\text{then } \rightarrow t = 10 \cdot 4 = 40 \text{ h}$$

Misconcepts. → Those are concepts of subject that people tell without the right information or knowledge.

1.) Radiation is harmful for babies in the uterus

2.) The 5g wifi network is the cause of corona

3.) Radiation is harmful for sperm cells and can decrease the potential of getting children.

Homework: Questions: 41 to 46

Ionisation:

If a radiation particle leaves the center of the atom with a high velocity. It can deliver lots of energy to other atoms or molecules. This process is called **ionisation**.

The higher amount of ionisation, the more exposed you're

Each atom has a certain amount of ionisation. A radiation particle has a penetration power. you can say the following:

Radiation particles with higher **penetration power** have less ionisation power.

If someone is exposed to ionisation, it can lead to:

- The grow of a tumor
- Birthdefects
- Change of DNA

Homework: 52-54

Changing an atom by purpose

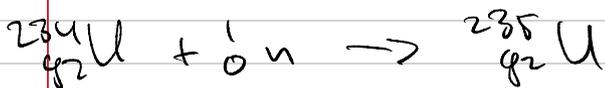
0n Neutron

1p proton

-1e electron (β^-)

1e positron (β^+)

Making Uranium -235 from Uranium -234



Practice Question:

Make the decay reaction serie of Uranium -235 until you reach Radium -223

Done? Continue with Radium -223 until you reach an Isotope that can't decay.

