

Answer on Question#65260 – Chemistry – General chemistry

Question:

46

${}_{23}\text{V} \rightarrow ? + 0 - 1e$

Solution:

This reaction is called *beta decay*, because one of the products is an electron ${}_{-1}^0e$ or ${}_{-1}^0\beta$.

Generic equation for this type of reactions: ${}^A_ZX \rightarrow {}^A_{Z+1}X' + {}_{-1}^0\beta$

X' has the same mass number A that X. In our case the mass number is 46.

X' has the atomic number Z+1. In our case the atomic number is 23+1=24.

An element with the atomic number 24 is a chromium.

So, ? is ${}^{46}_{24}\text{Cr}$ and our nuclear reaction is: ${}^{46}_{23}\text{V} \rightarrow {}^{46}_{24}\text{Cr} + {}_{-1}^0e$

Answer: ${}^{46}_{23}\text{V} \rightarrow {}^{46}_{24}\text{Cr} + {}_{-1}^0e$