Answer on Question #61938 - Chemistry - General Chemistry

Question

The mass of a single uranium atom is 4.70×10^{-22} grams. How many uranium atoms would there be in a sample of uranium with a volume of 278 cm^3 if the density of uranium is 23.3 g/cm^3?

Solution:

The mass of a sample of uranium:

$$m = V \cdot \rho = 278 \cdot 23.3 = 6477.4 \; (g)$$

The number of uranium atoms:

$$N = \frac{m}{m_1} = \frac{6477.4}{4.70 \cdot 10^{-22}} = 1.38 \cdot 10^{25}$$

Answer: N=1.38·10^{25}