Chemistry I - Standard

Average Atomic Mass Practice

To calculate average (relative) atomic mass of a sample of any element, multiply the mass of each isotope in a given problem by its corresponding percent abundance. Then add the products of each isotope to obtain the AVERAGE ATOMIC MASS. amu = atomic mass units

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Example:

Hydrogen-1 occurs in 96% of a sample, Hydrogen-2 occurs in 3% and Hydrogen-3 in 1%. Calculate the average atomic mass for hydrogen.

(1\*0.96) + (2\*0.03) + (3\*0.01) = **1.05 amu**

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1. Consider the following percent abundances for these isotopes of oxygen. Then calculate the average atomic mass for the sample: oxygen-15 (13.5%); oxygen-16 (83.9%); oxygen-18 (2.6%)
2. Consider these isotopes: sodium-22 (0.44%) and sodium-23 (99.56%). Calculate sodium’s average atomic mass.
3. If Carbon-12 accounts for 98.92% of a sample, and Carbon-14 is 0.022%, find the percentage of Carbon-13 in the sample if the average atomic mass is known to be 12.011amu.
4. A sample of uranium is composed of all three of its isotopes. Uranium-237 makes up 1.78% of the sample, uranium-238 makes up 98.2% of the sample, and uranium-239 makes up 0.02% of the sample. The average atomic mass of this sample of Uranium would be what mass rounded to 2 decimal places?
5. A new element is found. 36.1% of it has a mass of 126; 10.1% has a mass of 127, and the remainder (53.8%) has a mass of 125. What is the average atomic mass for this element?