

Isotopes and Average Atomic Mass

Atomic mass units are defined using Carbon-12 (1 u = 1/12th of a C-12 atom)

Isotopic Abundance: the relative amount of each isotope present in an element sample.

Ex. Each sample of Li contains:

Isotope	Mass	Abundance
Li-6	6.015 u	7.42%
Li-7	7.015 u	92.58%

Mass Spectrophotometer: an instrument that measures the mass of atoms by passing a sample through a magnet. See pg 166 in text.

Finding average atomic mass

Since the isotopes of Li are not present in equal amounts, you can't find the average with the usual method.

$$\text{Ave} \neq (6.015 + 7.015) \div 2$$

Weighted Average: takes into account different abundances.

$$\begin{aligned}\text{Ave Li} &= (0.0742)(6.015) + (0.9258)(7.015) \\ &= 6.94 \text{ u}\end{aligned}$$

Ex. 2

Isotope	Mass	Abundance
Ag-107	106.9 u	51.8%
Ag-109	108.9 u	48.2%

Calculating Abundances

Ex. 3

Isotope	Mass	Abundance
B-10	10.01 u	?
B-11	11.01u	?
Average =		

Ex. 4

Isotope	Mass	Abundance
K-39	39.0 u	?
K-41	41.0 u	?
Average =		