

Isotope Geochemistry

Isotopes

- Isotopes have different ## of neutrons, and thus a different mass
- Affect on reactions in small, but real, and provides another measurement of reactions – affected by similar physicochemical parameters!
- Also a critical tracer – the isotopes can be used to track molecules in a reaction!

Table 1.2 Atomic Weights and Abundances of the Stable H, C, N, and O Isotopes

Element	Isotope	Atomic Weight (amu)	Abundance (atom %)
Hydrogen ($Z = 1$)		1.0079	
	^1H (Protium)	1.007825	99.985
	^2H (D or Deuterium)	2.014102	0.015
Carbon ($Z = 6$)		12.011	
	^{12}C	12.00000	98.90
	^{13}C	13.00335	1.10
Nitrogen ($Z = 7$)		14.0067	
	^{14}N	14.003074	99.63
	^{15}N	15.000109	0.37
Oxygen ($Z = 8$)		15.9994	
	^{16}O	15.994915	99.76
	^{17}O	16.999131	0.04
	^{18}O	17.999160	0.20

Source: Walker et al., 1989.