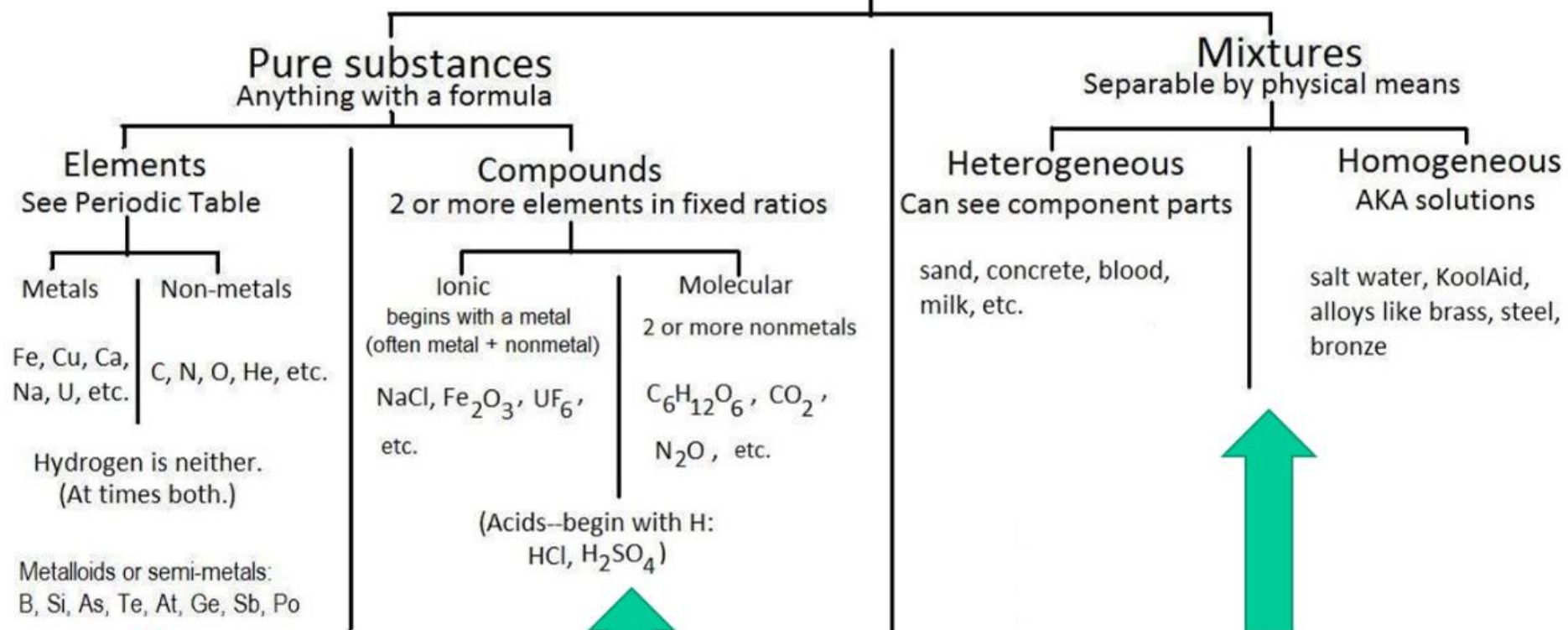


Matter



Metalloids or semi-metals:
B, Si, As, Te, At, Ge, Sb, Po

↑
Elements can only be separated by nuclear means, i.e., fission. And it's usually only very large nuclei.

↑
Compounds can only be separated by chemical means: When atoms in a compound are rearranged to make a new compound(s). Reactions alter the identity of reactants: Ex. $\text{H}_2\text{O}(\ell) \rightarrow \text{H}_2(\text{g}) + \text{O}_2(\text{g})$, called electrolysis, or $\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow \text{H}_2\text{O}(\ell)$, a combustion reaction. All combustion reactions require oxygen (O_2). Any burning, combusting, oxidation (like rusting), corrosion, etc. are chemical changes.

↑
Melting, vaporizing, freezing, filtering, crushing, ripping, magnetism, etc. are all physical changes or properties.
Ex. $\text{H}_2\text{O}(\ell) \rightarrow \text{H}_2\text{O}(\text{g})$.
Physical changes do not alter the identity of the original substance. ALL phase changes are physical changes.

1 1 H 1.00794																	18 2 He 4.002602
3 Li 6.941	4 Be 9.012182											13 5 B 10.811	14 6 C 12.0107	15 7 N 14.00674	16 8 O 15.9994	17 9 F 18.9984032	10 Ne 20.1797
11 Na 22.989770	12 Mg 24.3050											13 Al 26.581538	14 Si 28.0855	15 P 30.973762	16 S 32.066	17 Cl 35.453	18 Ar 39.948
19 K 39.0983	20 Ca 40.08	21 Sc 44.955910	22 Ti 47.867	23 V 50.9415	24 Cr 51.9961	25 Mn 54.938049	26 Fe 55.845	27 Co 58.933200	28 Ni 58.6534	29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.92160	34 Se 78.96	35 Br 79.504	36 Kr 83.80
37 Rb 85.4678	38 Sr 87.62	39 Y 88.9058	40 Zr 91.224	41 Nb 92.90638	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.9055	46 Pd 106.42	47 Ag 196.56655	48 Cd 112.411	49 In 14.818	50 Sn 118.710	51 Sb 121.760	52 Te 127.60	53 I 126.90447	54 Xe 131.29
55 Cs 132.90545	56 Ba 137.327	71 Lu 174.967	72 Hf 178.49	73 Ta 180.94788	74 W 183.84	75 Re 186.207	76 Os 190.23	77 Ir 192.217	78 Pt 195.078	79 Au 196.56655	80 Hg 200.59	81 Tl 204.3833	82 Pb 207.2	83 Bi 208.58038	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	103 Lr (262)	104 Rf (261)	105 Db (262)	106 Sg (263)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 Ds (269)	111 Rg (272)	112 Cn (277)	113 Uut (277)	114 Uuq (277)	115 Uup (277)	116 Uuh (277)		

57 La 138.9055	58 Ce 140.116	59 Pr 140.5076	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.964	64 Gd 157.25	65 Tb 158.92534	66 Dy 172.50	67 Ho 164.93032	68 Er 167.26	69 Tm 168.93421	70 Yb 173.04
89 Ac 232.0381	90 Th 232.0381	91 Pa 231.035888	92 U 238.0289	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)

Metals

Non-metals