

Chemistry: An Introduction

Chemistry is the study of matter and the changes it undergoes.



The Periodic Table of the Elements

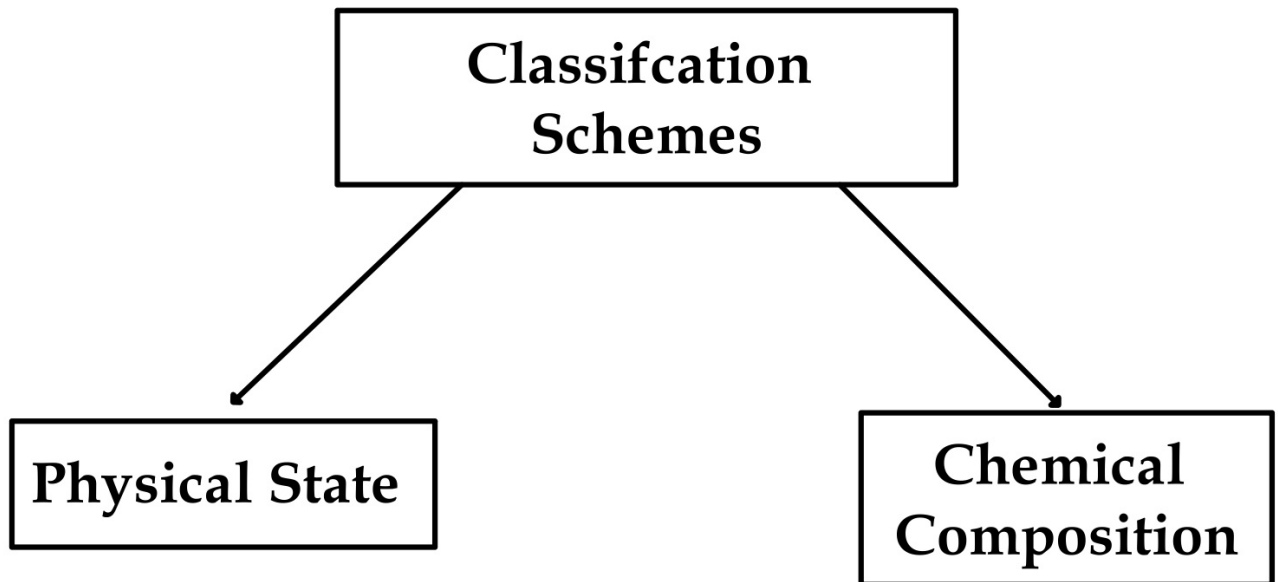
Group 1 / IA												18 / VIII						
H																	He	
2 / IIA												13 / IIIA	14 / IVA	15 / VA	16 / VIA	17 / VIIA		
Li	Be											B	C	N	O	F	Ne	
3 / IIIB		4 / IVB	5 / VB	6 / VIB	7 / VIIB	8	9 / VIII			10	11 / IB	12 / IIB	Al	Si	P	S	Cl	Ar
Na	Mg	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
K	Ca	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Rb	Sr	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Cs	Ba	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo	
Fr	Ra																	

Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

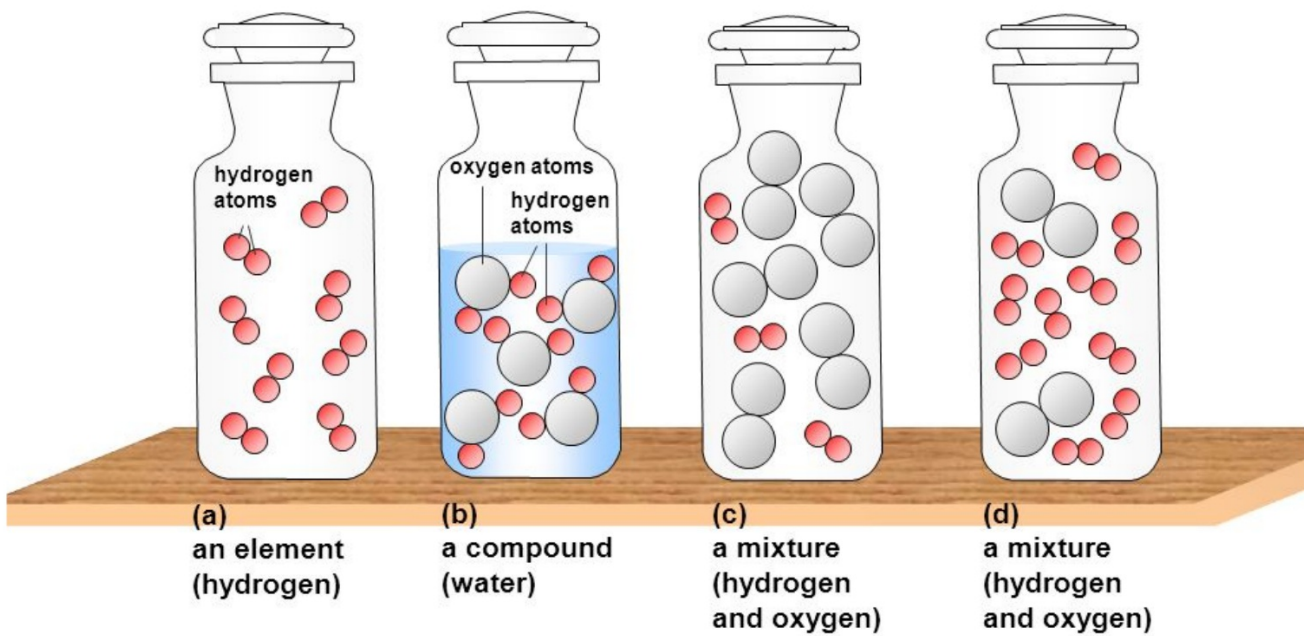
Must know the name, symbol, and location of these 35 common elements.

Check with your instructor for memorized elements.

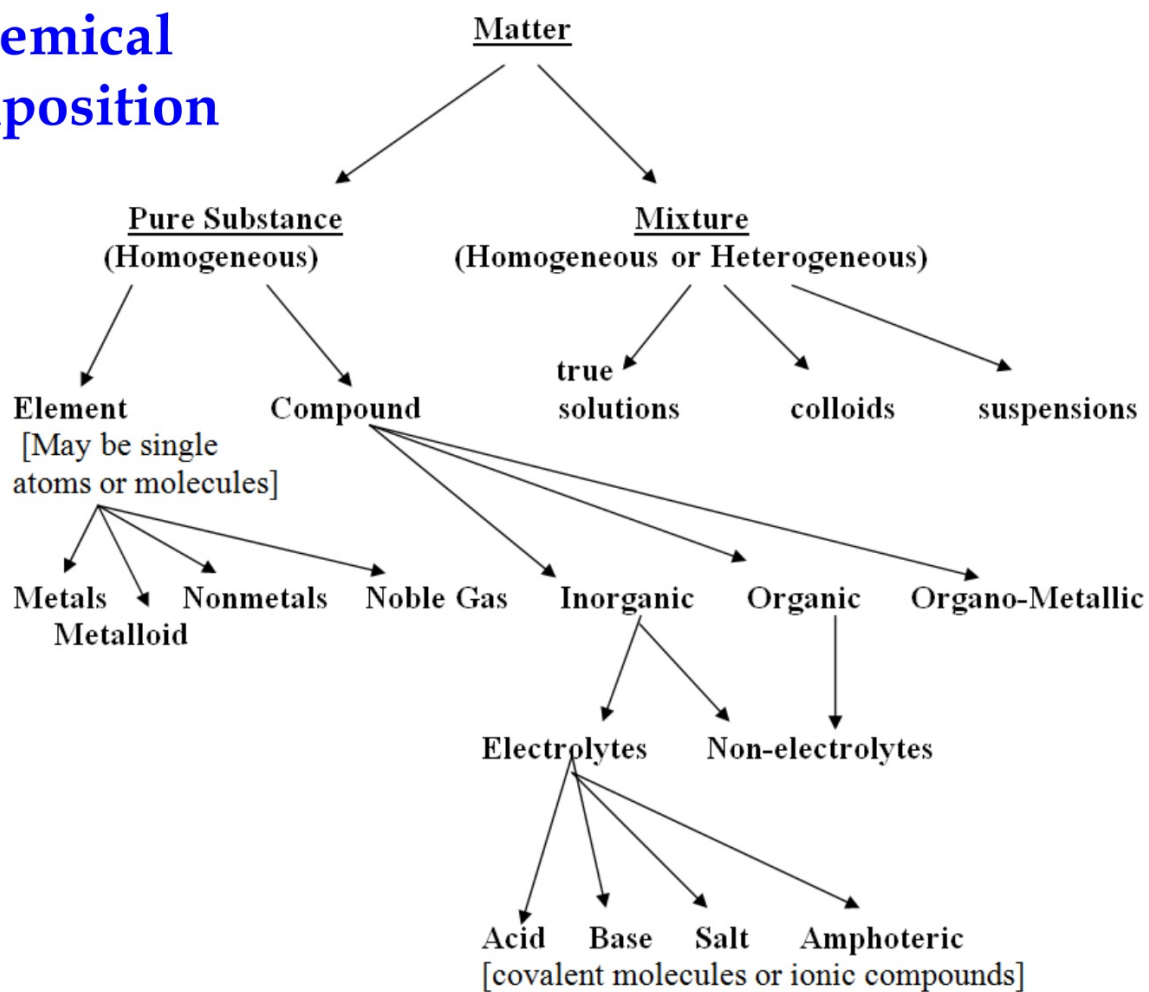
Classification of Matter



Element vs. Atom vs. Compound



Chemical Composition



Polyatomic Ions

A polyatomic ion (PAIs) is a charged chemical species composed of two or more atoms bonded together which are considered to be acting as a single unit (just like elements).



Discuss different numbers (charge, emp. #)
Check with your instructor for memorized PAIs!

Polyatomic Ions	
NH_4^+	Ammonium
BrO_3^-	Bromate
CN^-	Cyanide
$\text{C}_2\text{H}_3\text{O}_2^-$ (CH_3COO^-)	Acetate
ClO_4^-	Perchlorate
ClO_3^-	Chlorate
ClO_2^-	Chlorite
ClO^-	Hypochlorite
IO_3^-	Iodate
MnO_4^-	Permanganate
NO_3^-	Nitrate
NO_2^-	Nitrite
OH^-	Hydroxide
HCO_3^-	Hydrogen carbonate
HSO_4^-	Hydrogen sulfate
SCN^-	Thiocyanate
CO_3^{2-}	Carbonate
$\text{Cr}_2\text{O}_7^{2-}$	Dichromate
CrO_4^{2-}	Chromate
SO_4^{2-}	Sulfate
SO_3^{2-}	Sulfite
PO_4^{3-}	Phosphate

Classification of Matter

In-Class Examples

Determine whether the following substances is an element (E), compound (C), or a mixture (M).

- | | | | |
|----------|-------------------|-----------|----------------|
| 1. _____ | Table Salt (NaCl) | 9. _____ | Sweet Tea |
| 2. _____ | Apple | 10. _____ | Silver |
| 3. _____ | Plutonium | 11. _____ | Pure air |
| 4. _____ | Water | 12. _____ | Carbon Dioxide |
| 5. _____ | Calcium | 13. _____ | Kool-Aid |
| 6. _____ | Iron(II) nitrate | 14. _____ | Mud |
| 7. _____ | Gasoline | 15. _____ | Bronze |
| 8. _____ | Calcium Bromide | 16. _____ | Chicken soup |