

Molecular Nomenclature

Non-metals combining with other non-metals

Molecular/Covalent Bonding

- bonding between a non-metal & another non-metal
- electrons are shared between the non-metals (electrons ARE NOT transferred, lost, or gained - just shared)
- try some HOFBrINCl's: compare H_2 , O_2 , N_2

Greek Prefixes

- differ from ionic naming since prefixes **MUST** be used to designate the appropriate number of atoms (since molecules have fixed shape = specific number of atoms)
- if there is only one first non-metal atom, do not put the prefix "mono" (CO_2 is carbon dioxide, not monocarbon dioxide)

no prefix "mono" with first nonmetal
eg. carbon monoxide (not monocarbon monoxide)

Prefix Summary

Number	Prefix	Number	Prefix
1	mono-	5	penta-
2	di-	6	hexa-
3	tri-	7	hepta-
4	tetra-	8	octa-
5	penta-	9	nona-
		10	deca-

eg. SF_6 sulfur hexafluoride P_2O_5 tetraphosphorus decoxide
 N_2O_5 dinitrogen trioxide S_2F_8 tetrasulfur octafluoride
 CCl_4 carbon tetrachloride PBr_5 phosphorus pentabromide
 CO carbon monoxide N_2 nitrogen trioxide
 Li_2O tetralithium dioxide SO_2 sulfur dioxide

Note: Naming of Alkanes with 1, 2, 3, or 4 Carbons
 • the first four alkane names in the series were in widespread use before the naming system was standardized
 • their order can be remembered using the mnemonic sentence: *methane gas peeled bananas*

Name (see new to right)	Formula (C_nH_{2n+2})
methane (common)	CH_4
ethane (common)	C_2H_6
propane (common)	C_3H_8
butane (common)	C_4H_{10}

Name	Formula (C_nH_{2n+2})
pentane	C_5H_{12}
hexane	C_6H_{14}
heptane	C_7H_{16}
octane	C_8H_{18}
nonane	C_9H_{20}
decane	$C_{10}H_{22}$

• after the first 4 hydrocarbons, standardized prefixes are used: penta = 5, hexa = 6, hepta = 7, octa = 8, nona = 9, deca = 10