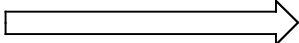


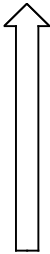
For Elements in the First Three Rows, the Group # = # of Valence Electrons

Group	IA	IIA	IIIA	IVA	VA	VIA	VII	Noble gases	
	H(1)							He(2)	2 valence e
	Li(3)	Be(4)	B(5)	C(6)	N(7)	O(8)	F(9)	Ne(10)	8 valence e
	Na(11)	Mg(12)	Al(13)	Si(14)	P(15)	S(16)	Cl(17)	Ar(18)	8 valence e
Valency	mono	di	tri	tetra	tri	di	mono	zero	

Pauling Electronegativities of Important “Organic” Elements

increasing 

			H 2.2				
Li 1.0	Be 1.6	B 2.0	C 2.6	N 3.0	O 3.4	F 4.0	
Na 0.9			Si 1.9	P 2.2	S 2.6	Cl 3.2	
K 0.8						Br 3.0	
						I 2.7	

 increasing

Formal Charges of Common Organic Groups

Hydrogen	H ⁺	H— zero	H:⁻	
Carbon	Tetravalent C is 0	$\begin{array}{c} \\ -C- \\ \end{array}$	$\begin{array}{c} // \\ =C \\ \backslash \end{array}$	$\equiv C-$
	Trivalent C with no lone pair is + 1	$\begin{array}{c} \\ -C^+ \\ \end{array}$	$\begin{array}{c} // \\ =C^+ \\ \backslash \end{array}$	$\equiv C^+$
	Trivalent C with lone pair is -1	$\begin{array}{c} \\ -C: \\ \end{array}$	$\begin{array}{c} // \\ =C: \\ \backslash \end{array}$	$\equiv C:^-$
Nitrogen	Trivalent N is 0 (1 lone pair)	$\begin{array}{c} \\ -N: \\ \end{array}$	$\begin{array}{c} // \\ =N: \\ \backslash \end{array}$	$\equiv N:$
	Tetravalent N is + 1 (no lone pair)	$\begin{array}{c} \\ -N^+ \\ \end{array}$	$\begin{array}{c} // \\ =N^+ \\ \backslash \end{array}$	$\equiv N^+$
	Divalent N is - 1 (2 lone pairs)	$\begin{array}{c} \cdot\cdot \\ -N- \\ \cdot\cdot \end{array}$	$\begin{array}{c} \cdot\cdot \\ =N: \\ \cdot\cdot \end{array}$	
Oxygen	Divalent O is 0 (2 lone pairs)	$\begin{array}{c} \cdot\cdot \\ -O- \\ \cdot\cdot \end{array}$	$\begin{array}{c} \cdot\cdot \\ =O: \\ \cdot\cdot \end{array}$	
	Trivalent O is + 1 (1 lone pair)	$\begin{array}{c} \cdot\cdot \\ -O^+ \\ \end{array}$	$\begin{array}{c} \cdot\cdot \\ =O^+ \\ \backslash \end{array}$	
	Monovalent O is - 1 (3 lone pairs)	$\begin{array}{c} \cdot\cdot \\ -O: \\ \cdot\cdot \end{array}$		
Halogen	(F, Cl, Br, I)	$\begin{array}{c} \cdot\cdot \\ -X^+ \\ \cdot\cdot \end{array}$	$\begin{array}{c} \cdot\cdot \\ -X: \\ \cdot\cdot \end{array}$	$\begin{array}{c} \cdot\cdot \\ :X: \\ \cdot\cdot \end{array}$