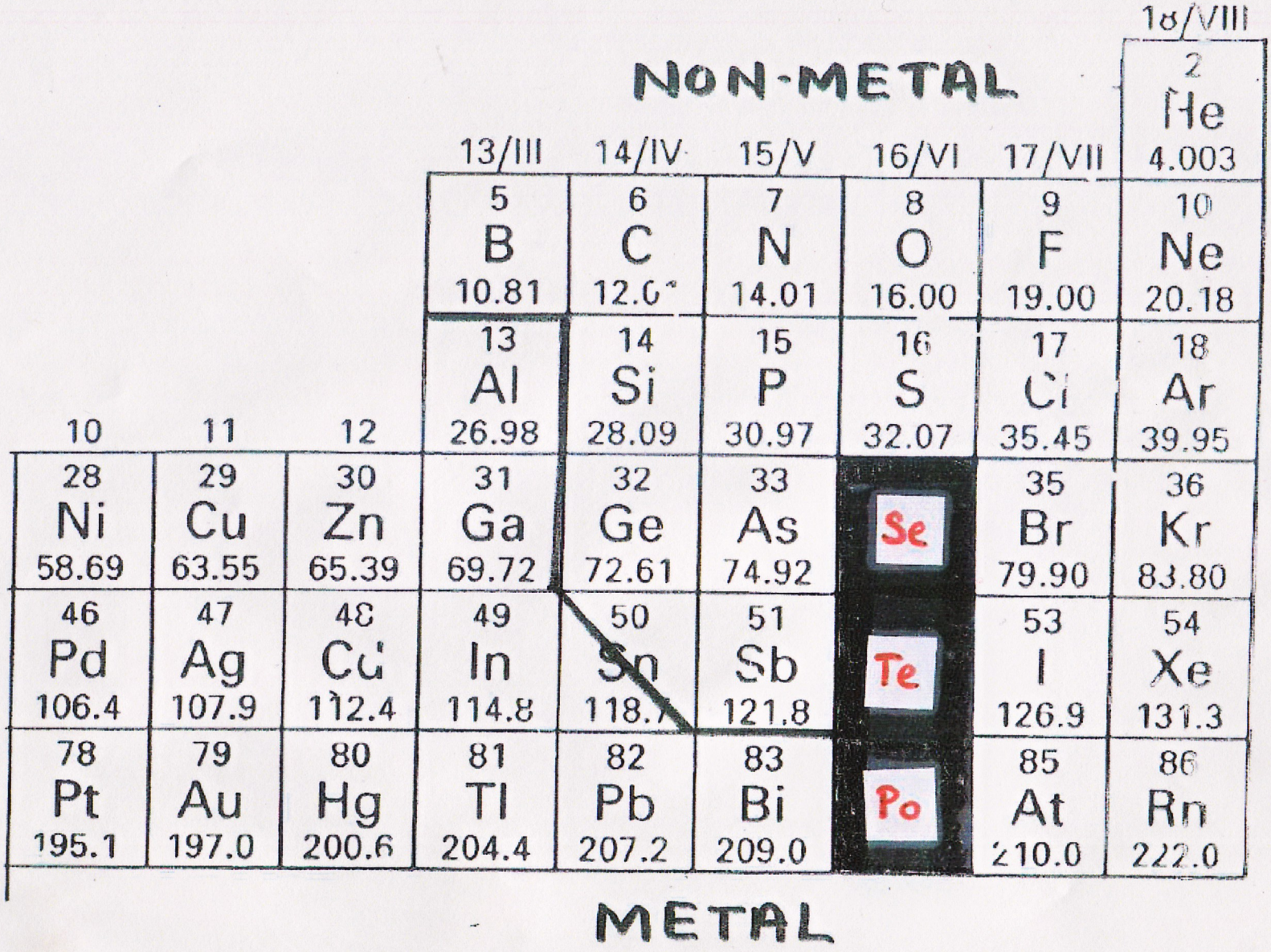
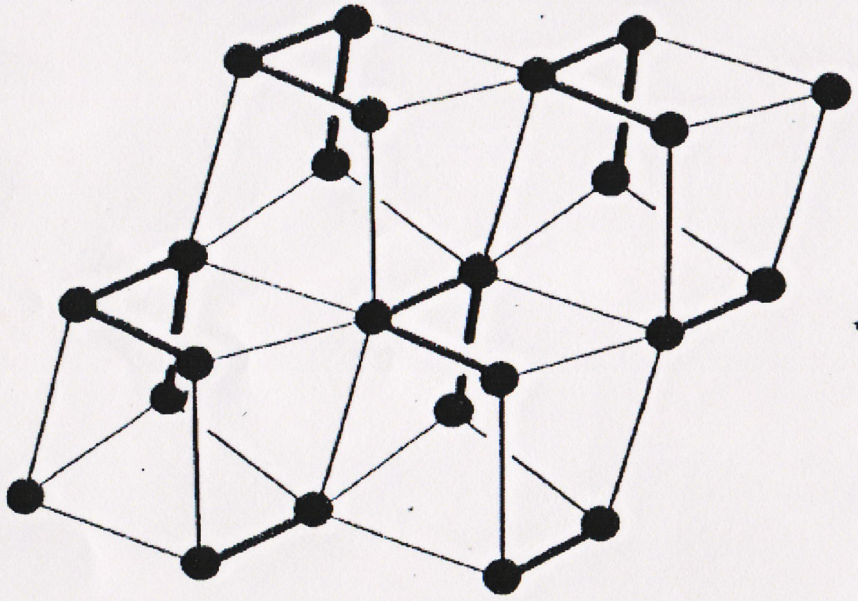
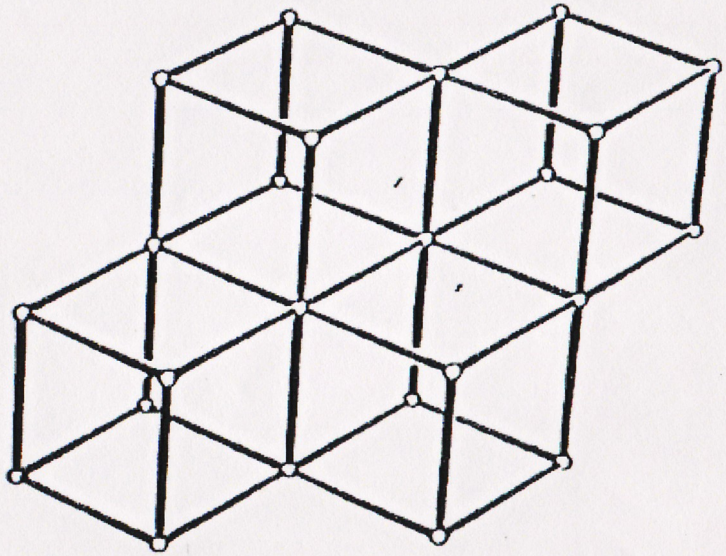

NON-METAL
METAL
13/III
14/IV
15/V
16/VI
17/VII
18/VIII
2 He 4.003
5 B 10.81
6 C 12.0
7 N 14.01
8 O 16.00
9 F 19.00
10 Ne 20.18
13 Al 26.98
14 Si 28.09
15 P 30.97
16 S 32.07
17 Cl 35.45
18 Ar 39.95
10
11
12
28 Ni 58.69
29 Cu 63.55
30 Zn 65.39
31 Ga 69.72
32 Ge 72.61
33 As 74.92
Se
35 Br 79.90
36 Kr 83.80
46 Pd 106.4
47 Ag 107.9
48 Cd 112.4
49 In 114.8
50 Sn 118.7
51 Sb 121.8
Te
53 I 126.9
54 Xe 131.3
78 Pt 195.1
79 Au 197.0
80 Hg 200.6
81 Tl 204.4
82 Pb 207.2
83 Bi 209.0
Po
85 At 210.0
86 Rn 222.0

Se + Te



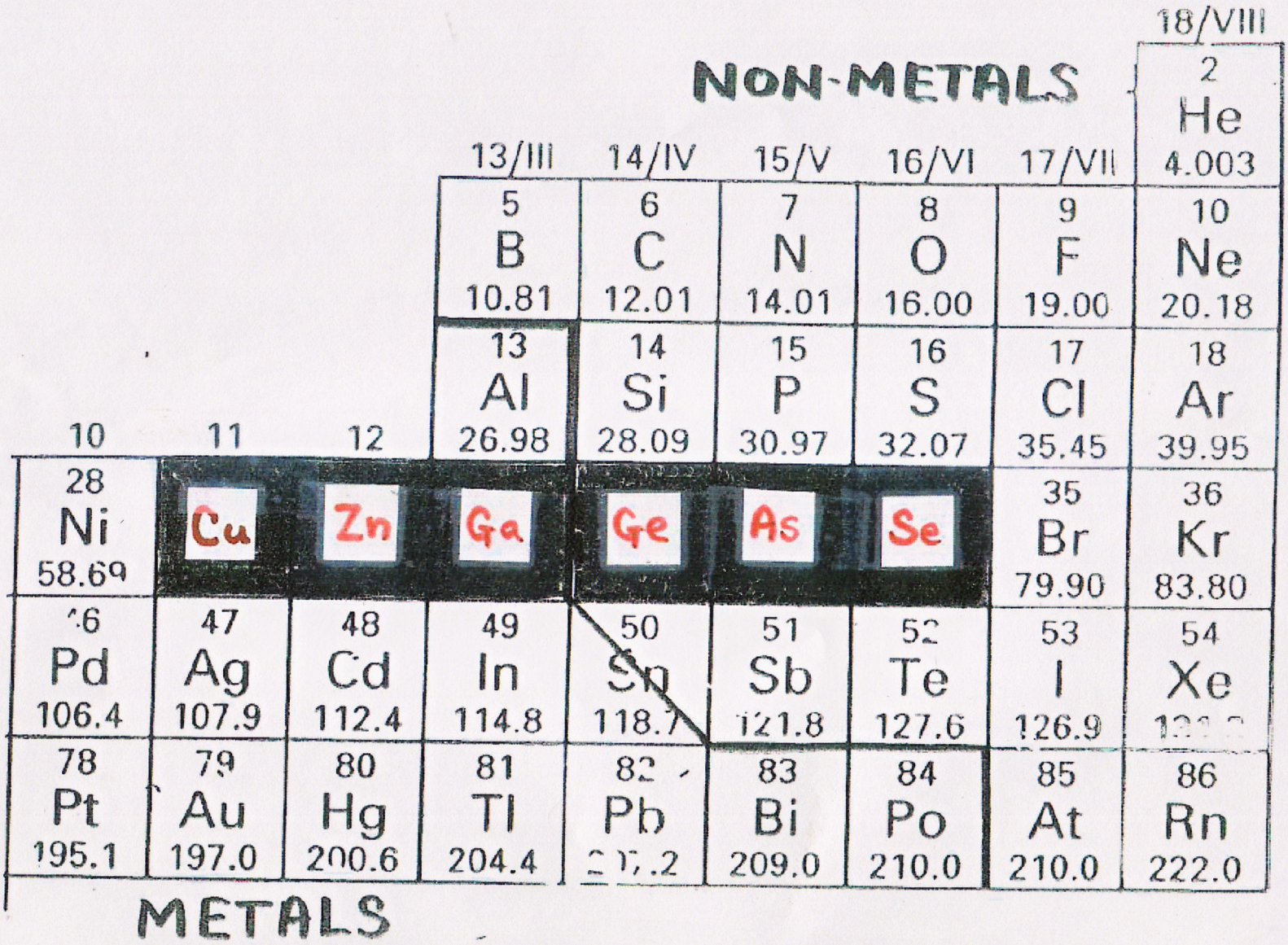
Non-Metal

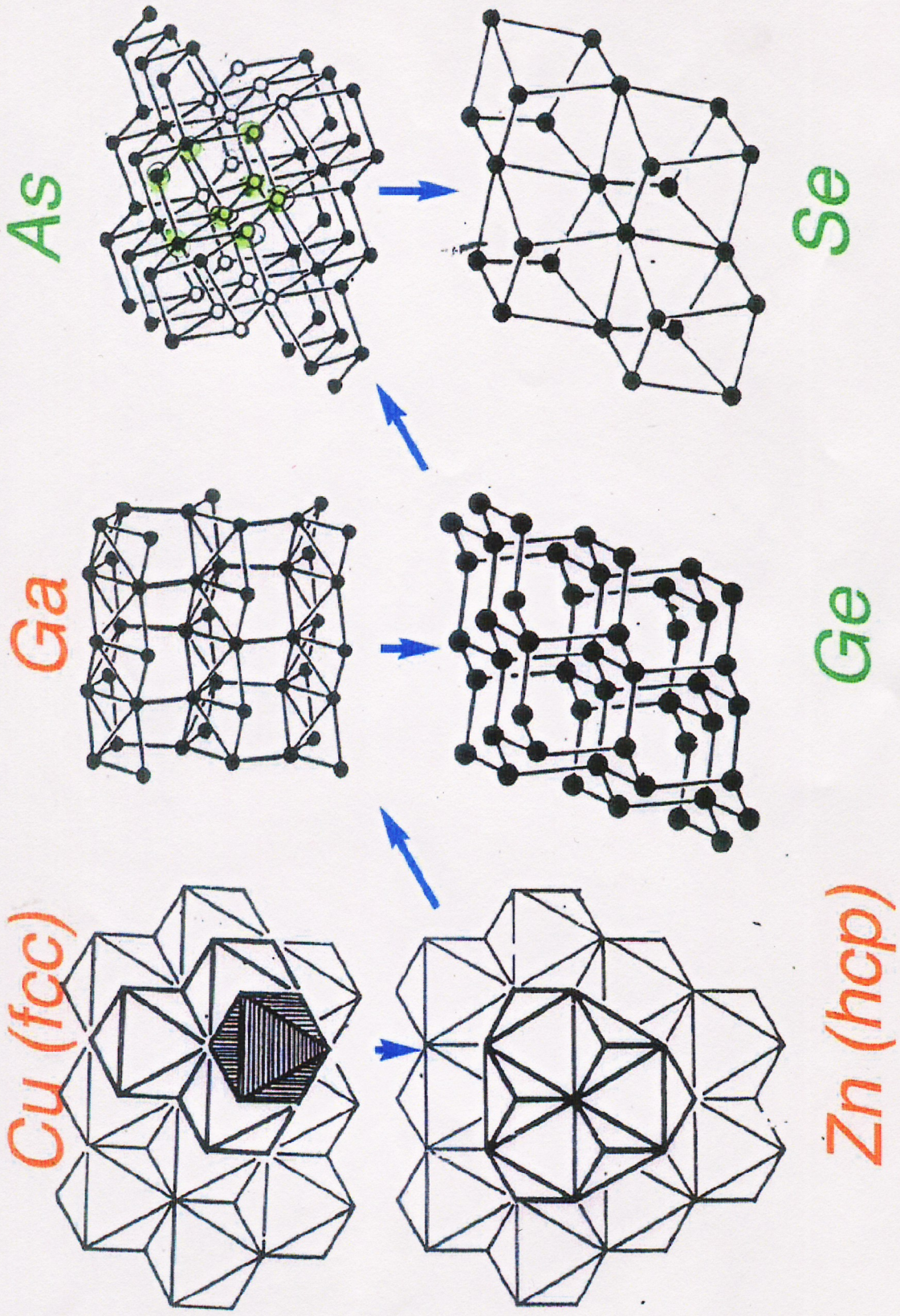
Po



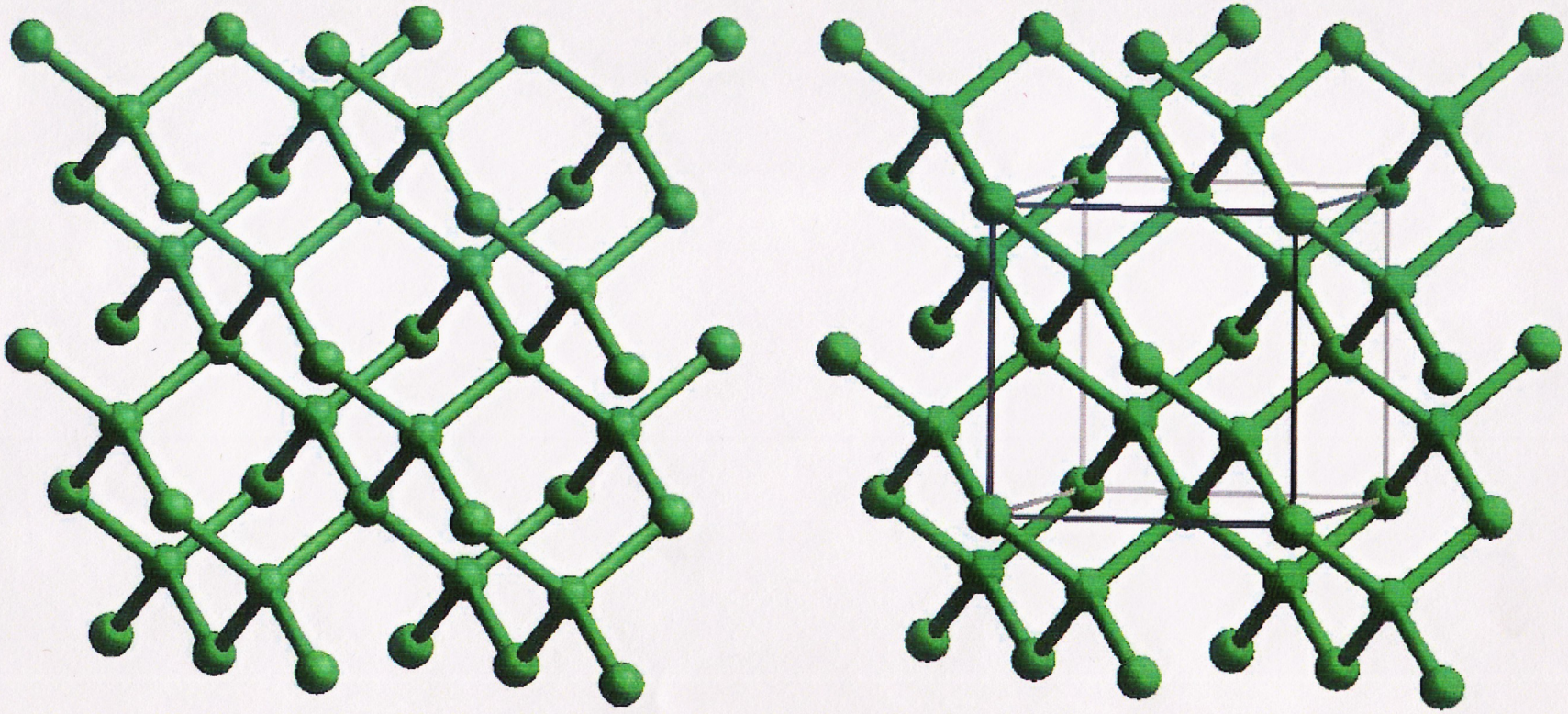
Metal

42.16

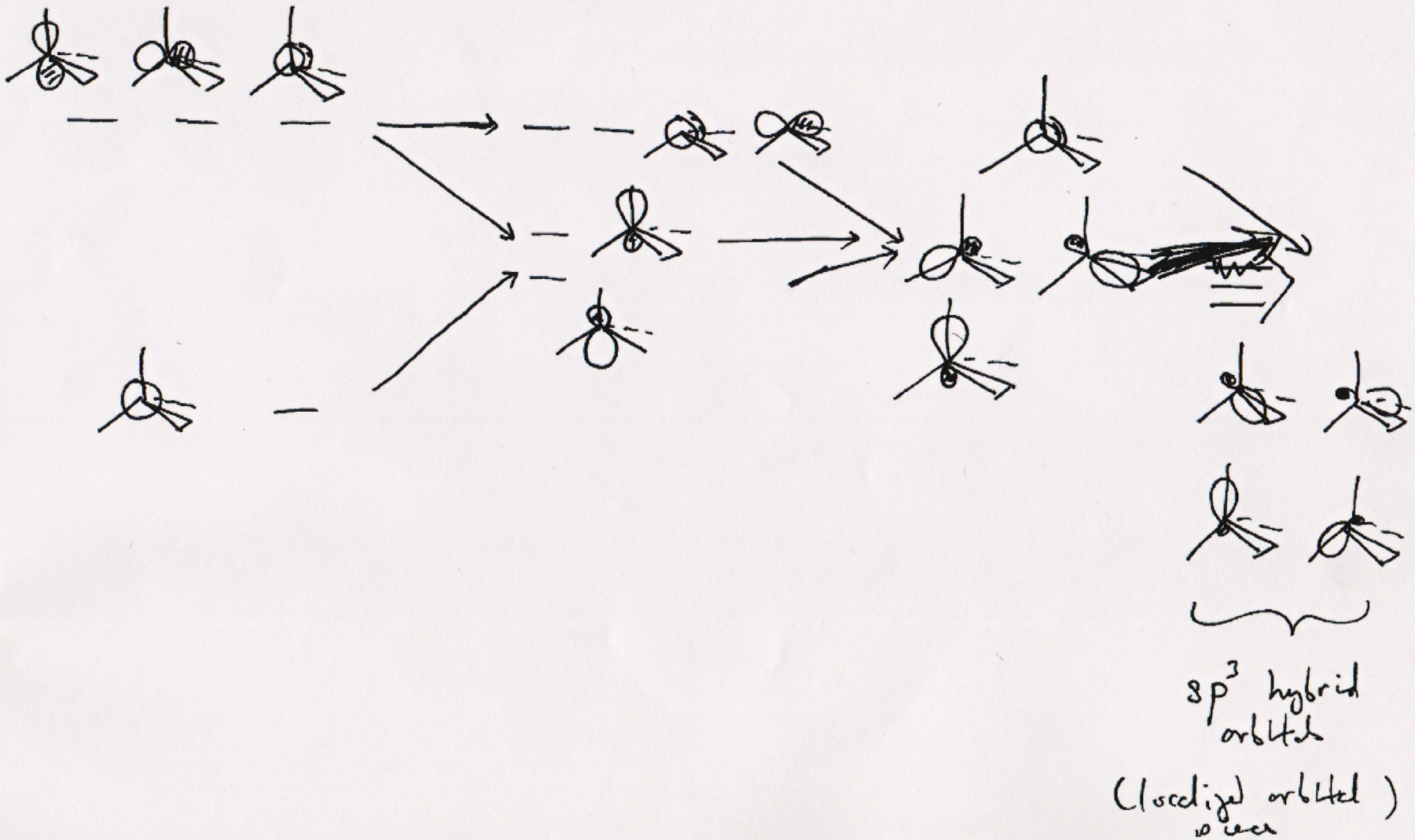

NON-METALS
METALS
18/VIII
13/III
14/IV
15/V
16/VI
17/VII
10
11
12
2 He 4.003
5 B 10.81
6 C 12.01
7 N 14.01
8 O 16.00
9 F 19.00
10 Ne 20.18
13 Al 26.98
14 Si 28.09
15 P 30.97
16 S 32.07
17 Cl 35.45
18 Ar 39.95
28 Ni 58.69
Cu
Zn
Ga
Ge
As
Se
35 Br 79.90
36 Kr 83.80
46 Pd 106.4
47 Ag 107.9
48 Cd 112.4
49 In 114.8
50 Sn 118.7
51 Sb 121.8
52 Te 127.6
53 I 126.9
54 Xe
78 Pt 195.1
79 Au 197.0
80 Hg 200.6
81 Tl 204.4
82 Pb
83 Bi 209.0
84 Po 210.0
85 At 210.0
86 Rn 222.0


As
Se
Ga
Ge
Cu (fcc)
Zn (hcp)

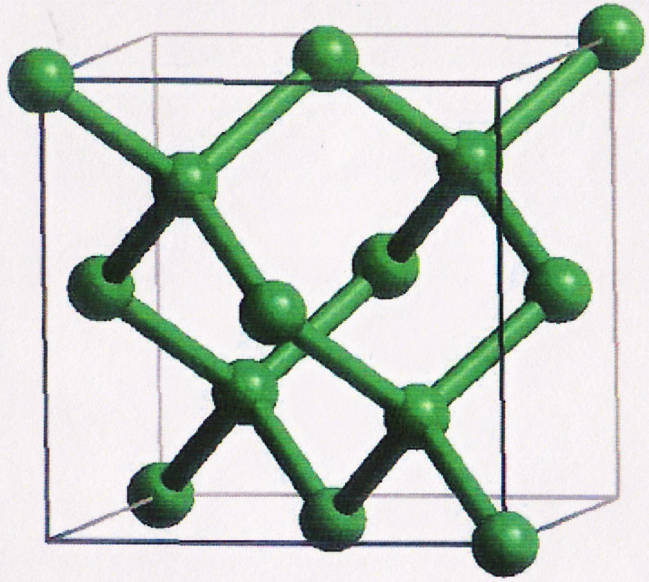
Carbon: cubic diamond



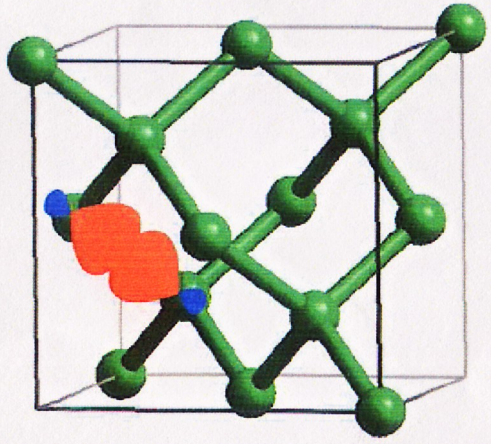
If we wish to generate localized orbitals (which are not eigenstates of anything!) we need to do the opposite of making a MO diagram, and mix orbitals so that they become of equal energy.

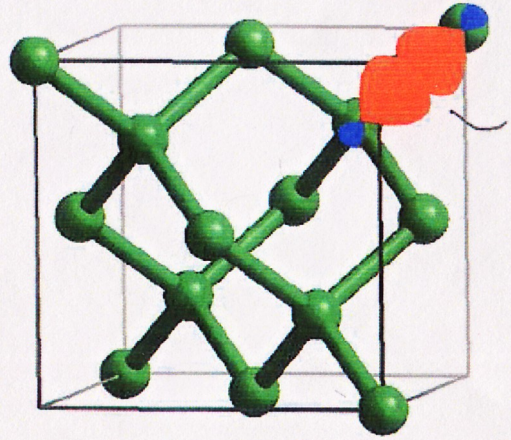


4.19



diamond





local lone orbitals
σ-bond

diamond is not a Lewis acid or a Lewis base.

diamond: localized σ* antibonding orbitals