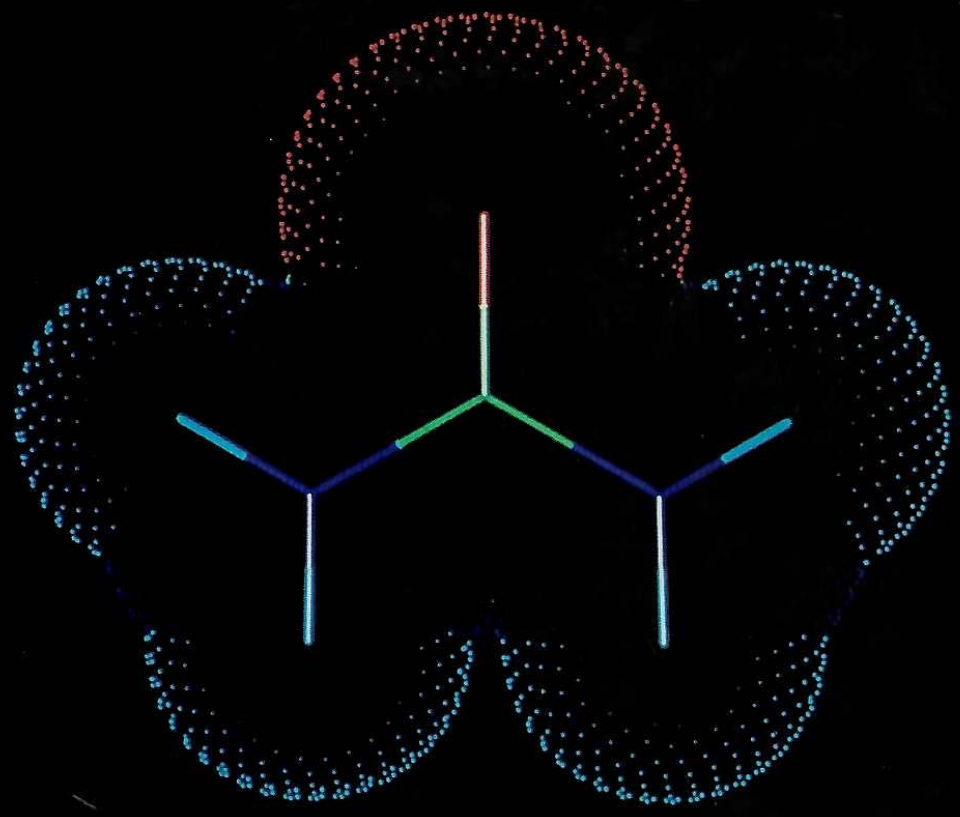
SOLOMONS



ORGANIC CHEMISTRY

FIFTH EDITION

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ORGANIC CHEMISTRY

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Fig. 14-38 Diasonics, Inc.

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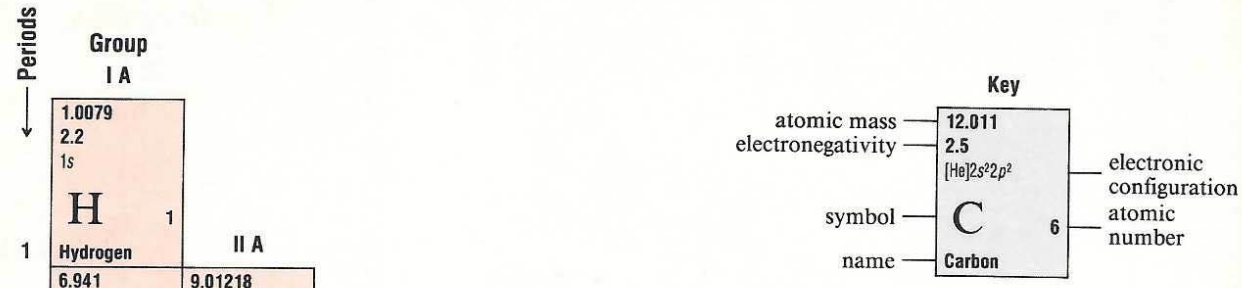
Periodic Table of the Elements



Periods	I A	II A	III B	IV B	V B	VI B	VII B	VII	
1	1.0079 2.2 1s **H** 1 Hydrogen								
2	6.941 1.0 [He]2s **Li** 3 Lithium	9.01218 1.5 [He]2s² **Be** 4 Beryllium							
3	22.98977 1.0 [Ne]3s **Na** 11 Sodium	24.305 1.2 [Ne]3s² **Mg** 12 Magnesium							
4	39.0983 0.9 [Ar]4s **K** 19 Potassium	40.08 1.0 [Ar]4s² **Ca** 20 Calcium	44.9559 1.2 [Ar]3d4s² **Sc** 21 Scandium	47.88 1.3 [Ar]3d²4s² **Ti** 22 Titanium	50.9415 1.5 [Ar]3d³4s² **V** 23 Vanadium	51.996 1.6 [Ar]3d⁵4s **Cr** 24 Chromium	54.9380 1.6 [Ar]3d⁵4s² **Mn** 25 Manganese	55.847 1.6 [Ar]3d⁶4s² **Fe** 26 Iron	58.9332 1.7 [Ar]3d⁷4s² **Co** 27 Cobalt
5	85.4678 0.9 [Kr]5s **Rb** 37 Rubidium	87.62 1.0 [Kr]5s² **Sr** 38 Strontium	88.9059 1.1 [Kr]4d5s² **Y** 39 Yttrium	91.22 1.2 [Kr]4d²5s² **Zr** 40 Zirconium	92.9064 1.2 [Kr]4d⁴5s **Nb** 41 Niobium	95.94 1.3 [Kr]4d⁵5s **Mo** 42 Molybdenum	98.906 1.4 [Kr]4d⁶5s **Tc** 43 Technetium	101.07 1.4 [Kr]4d⁷5s **Ru** 44 Ruthenium	102.9055 1.5 [Kr]4d⁸5s **Rh** 45 Rhodium
6	132.9054 0.9 [Xe]6s **Cs** 55 Cesium	137.33 1.0 [Xe]6s² **Ba** 56 Barium	138.9055 1.1 [Xe]5d6s² *La 57 Lanthanum	178.49 1.2 [Xe]4f¹⁴5d²6s² **Hf** 72 Hafnium	180.9479 1.3 [Xe]4f¹⁴5d³6s² **Ta** 73 Tantalum	183.85 1.4 [Xe]4f¹⁴5d⁴6s² **W** 74 Tungsten	186.207 1.5 [Xe]4f¹⁴5d⁵6s² **Re** 75 Rhenium	190.2 1.5 [Xe]4f¹⁴5d⁶6s² **Os** 76 Osmium	192.22 1.6 [Xe]4f¹⁴5d⁷6s² **Ir** 77 Iridium
7	(223) 0.9 [Rn]7s **Fr** 87 Francium	226.0254 1.0 [Rn]7s² **Ra** 88 Radium	227.0278 1.0 [Rn]6d7s² †Ac 89 Actinium	(261) [Rn]5f¹⁴6d²7s² **Unq** 104 Unnilquadium	(262) [Rn]5f¹⁴6d³7s² **Unp** 105 Unnilpentium	(263) [Rn]5f¹⁴6d⁴7s² **Unh** 106 Unnilhexium			

* Lanthanides	140.12 1.1 [Xe]4f²6s² **Ce** 58 Cerium	140.9077 1.1 [Xe]4f³6s² **Pr** 59 Praseodymium	144.24 1.1 [Xe]4f⁴6s² **Nd** 60 Neodymium	145 1.1 [Xe]4f⁵6s² **Pm** 61 Promethium	150.4 1.1 [Xe]4f⁶6s² **Sm** 62 Samarium	151.96 1.0 [Xe]4f⁷6s² **Eu** 63 Europium	157.25 1.1 [Xe]4f⁷5d6s² **Gd** 64 Gadolinium
† Actinides	232.0381 1.1 [Rn]6d²7s² **Th** 90 Thorium	231.0359 1.1 [Rn]5f²6d7s² **Pa** 91 Protactinium	238.029 1.2 [Rn]5f³6d7s² **U** 92 Uranium	237.0482 1.2 [Rn]5f⁴6d7s² **Np** 93 Neptunium	(244) 1.2 [Rn]5f⁷7s² **Pu** 94 Plutonium	(243) 1.2 [Rn]5f⁷7s² **Am** 95 Americium	(247) ≈1.2 [Rn]5f⁷6d7s² **Cm** 96 Curium

electronic configuration
atomic number

6

						Noble Gases 0
						4.0026 $1s^2$ He 2 Helium
			III A	IV A	V A	VI A	VII A	
			10.81 2.0 $[He]2s^22p$ B 5 Boron	12.011 2.5 $[He]2s^22p^2$ C 6 Carbon	14.0067 3.1 $[He]2s^22p^3$ N 7 Nitrogen	15.9994 3.5 $[He]2s^22p^4$ O 8 Oxygen	18.9984 4.1 $[He]2s^22p^5$ F 9 Fluorine	20.179 $[He]2s^22p^6$ Ne 10 Neon
			26.9815 1.5 $[Ne]3s^23p$ Al 13 Aluminum	28.0855 1.7 $[Ne]3s^23p^2$ Si 14 Silicon	30.97376 2.1 $[Ne]3s^23p^3$ P 15 Phosphorus	32.06 2.4 $[Ne]3s^23p^4$ S 16 Sulfur	35.453 2.8 $[Ne]3s^23p^5$ Cl 17 Chlorine	39.948 $[Ne]3s^23p^6$ Ar 18 Argon
		I B	II B					
58.70 1.8 $[Ar]3d^84s^2$ Ni 28 Nickel	63.546 1.8 $[Ar]3d^{10}4s$ Cu 29 Copper	65.38 1.7 $[Ar]3d^{10}4s^2$ Zn 30 Zinc	69.72 1.8 $[Ar]3d^{10}4s^24p$ Ga 31 Gallium	72.59 2.0 $[Ar]3d^{10}4s^24p^2$ Ge 32 Germanium	74.9216 2.2 $[Ar]3d^{10}4s^24p^3$ As 33 Arsenic	78.96 2.5 $[Ar]3d^{10}4s^24p^4$ Se 34 Selenium	79.904 2.7 $[Ar]3d^{10}4s^24p^5$ Br 35 Bromine	83.80 $[Ar]3d^{10}4s^24p^6$ Kr 36 Krypton
106.4 1.4 $[Kr]4d^{10}$ Pd 46 Palladium	107.868 1.4 $[Kr]4d^{10}5s$ Ag 47 Silver	112.41 1.5 $[Kr]4d^{10}5s^2$ Cd 48 Cadmium	114.82 1.5 $[Kr]4d^{10}5s^25p$ In 49 Indium	118.69 1.7 $[Kr]4d^{10}5s^25p^2$ Sn 50 Tin	121.75 1.8 $[Kr]4d^{10}5s^25p^3$ Sb 51 Antimony	127.60 2.0 $[Kr]4d^{10}5s^25p^4$ Te 52 Tellurium	126.9045 2.2 $[Kr]4d^{10}5s^25p^5$ I 53 Iodine	131.30 $[Kr]4d^{10}5s^25p^6$ Xe 54 Xenon
195.09 1.4 $[Xe]4f^{14}5d^96s$ Pt 78 Platinum	196.9665 1.4 $[Xe]4f^{14}5d^{10}6s$ Au 79 Gold	200.59 1.5 $[Xe]4f^{14}5d^{10}6s^2$ Hg 80 Mercury	204.37 1.4 $[Xe]4f^{14}5d^{10}6s^26p$ Tl 81 Thallium	207.2 1.6 $[Xe]4f^{14}5d^{10}6s^26p^2$ Pb 82 Lead	208.9804 1.7 $[Xe]4f^{14}5d^{10}6s^26p^3$ Bi 83 Bismuth	(209) 1.8 $[Xe]4f^{14}5d^{10}6s^26p^4$ Po 84 Polonium	(210) 2.0 $[Xe]4f^{14}5d^{10}6s^26p^5$ At 85 Astatine	(222) $[Xe]4f^{14}5d^{10}6s^26p^6$ Rn 86 Radon

158.9254 1.1 $[Xe]4f^96s^2$ Tb 65 Terbium	162.50 1.1 $[Xe]4f^{10}6s^2$ Dy 66 Dysprosium	164.9304 1.1 $[Xe]4f^{11}6s^2$ Ho 67 Holmium	167.26 1.1 $[Xe]4f^{12}6s^2$ Er 68 Erbium	168.9342 1.1 $[Xe]4f^{13}6s^2$ Tm 69 Thulium	173.04 1.1 $[Xe]4f^{14}6s^2$ Yb 70 Ytterbium	174.967 1.1 $[Xe]4f^{14}5d^16s^2$ Lu 71 Lutetium
(247) ≈1.2 $[Rn]5f^97s^2$ Bk 97 Berkelium	(251) ≈1.2 $[Rn]5f^{10}7s^2$ Cf 98 Californium	(254) ≈1.2 $[Rn]5f^{11}7s^2$ Es 99 Einsteinium	(257) ≈1.2 $[Rn]5f^{12}7s^2$ Fm 100 Fermium	(258) ≈1.2 $[Rn]5f^{13}7s^2$ Md 101 Mendelevium	259 $[Rn]5f^{14}7s^2$ No 102 Nobelium	260 $[Rn]5f^{14}6d^17s^2$ Lr 103 Lawrencium