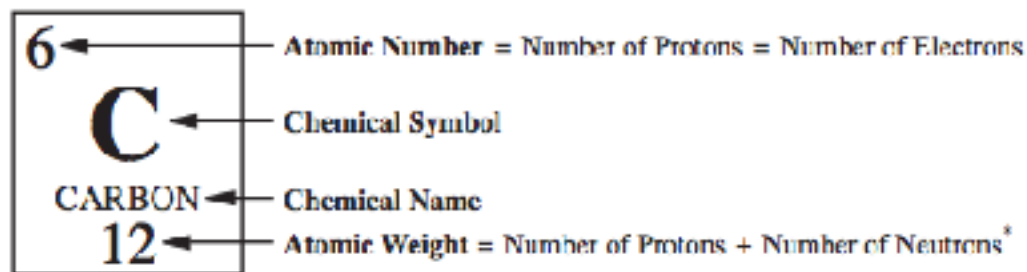


## The periodic Table



### 2.4 The Periodic Table

The **periodic table** is used to organize the elements in a meaningful way

**Metallic elements** are located in the left-hand side of the periodic table. Most are metals. They tend to be malleable, ductile, and lustrous and are good thermal and electrical conductors.

**Nonmetallic elements** are located in the top right-hand side of the periodic table. They tend to be brittle as solids, dull in appearance, and do not conduct heat or electricity well.

Elements with properties similar to both metals and nonmetals are called **metalloids** and are located at the interface between metals and nonmetals. These include the elements B, Si, Ge, As, Sb and Te.

# The Periodic Table of Elements

1 H HYDROGEN 1																	2 He HELIUM 4									
3 Li LITHIUM 7	4 Be BERYLLIUM 9											NON-METALS														
11 Na SODIUM 23	12 Mg MAGNESIUM 24											5 B BORON 11	6 C CARBON 12	7 N NITROGEN 14	8 O OXYGEN 16	9 F FLUORINE 19	10 Ne NEON 20									
METALS												13 Al ALUMINUM 27	14 Si SILICON 28	15 P PHOSPHORUS 31	16 S SULFUR 32	17 Cl CHLORINE 35	18 Ar ARGON 40									
19 K POTASSIUM 39	20 Ca CALCIUM 40	21 Sc SCANDIUM 45	22 Ti TITANIUM 48	23 V VANADIUM 51	24 Cr CHROMIUM 52	25 Mn MANGANESE 55	26 Fe IRON 56	27 Co COBALT 59	28 Ni NICKEL 59	29 Cu COPPER 64	30 Zn ZINC 65	31 Ga GALLIUM 70	32 Ge GERMANIUM 73	33 As ARSENIC 75	34 Se SELENIUM 79	35 Br BROMINE 80	36 Kr KRYPTON 84									
37 Rb RUBIDIUM 85	38 Sr STRONTIUM 88	39 Y YTIUM 89	40 Zr ZIRCONIUM 91	41 Nb NIOBIUM 93	42 Mo MOLYBDENUM 96	43 Tc TECHNETIUM 98*	44 Ru RUTHENIUM 101	45 Rh RHODIUM 103	46 Pd PALLADIUM 106	47 Ag SILVER 108	48 Cd CADMIUM 112	49 In INDIUM 115	50 Sn TIN 119	51 Sb ANTIMONY 122	52 Te TELLURIUM 128	53 I IODINE 127	54 Xe XENON 131									
55 Cs CESIUM 133	56 Ba BARIUM 137											72 Hf HAFNIUM 178	73 Ta TANTALUM 181	74 W WOLYBDEUM 184	75 Re RHENIUM 186	76 Os OSMIUM 190	77 Ir IRIDIUM 192	78 Pt PLATINUM 195	79 Au GOLD 197	80 Hg MERCURY 201	81 Tl THALLIUM 204	82 Pb LEAD 207	83 Bi BISMUTH 209*	84 Po POLONIUM 209*	85 At ASTATINE 210*	86 Rn RADON 222*
87 Fr FRANCIUM 223*	88 Ra RADIUM 226*											104 Rf RUFENIUM 261*	105 Db DUBNIUM 268*	106 Sg SEABORGIUM 271*	107 Bh BOHRIUM 270*	108 Hs HASSIUM 270*	109 Mt MEITNERIUM 278*	110 Ds DARMSTADTIUM 281*	111 Rg ROSGOLDIUM 281*	112 Cn COCHINCHIUM 285*	113 Nh NIHONIUM 286*	114 Fl FLEROVIUM 289*	115 Mc MOSCOWIUM 289*	116 Lv LIVERMORIUM 293*	117 Ts TENNESSIUM 293*	118 Og OGANESSIUM 294*

6 ← Atomic Number = Number of Protons = Number of Electrons

C ← Chemical Symbol

CARBON ← Chemical Name

12 ← Atomic Weight = Number of Protons + Number of Neutrons\*

KEY	
	Field at room temperature
	Liquid at room temperature
	Gas at room temperature
	Radioactive
	Artificially Made

57 La LANTHANUM 139	58 Ce CELESIUM 140	59 Pr PRASEODYMIUM 141	60 Nd NEODYMIUM 144	61 Pm PROMETHIUM 145*	62 Sm SAMARIUM 150	63 Eu EUROPEIUM 152	64 Gd GADOLINIUM 157	65 Tb TERBIUM 159	66 Dy DYSPROSIUM 163	67 Ho HOLMIUM 165	68 Er ERBIUM 167	69 Tm THULIUM 169	70 Yb YTERBIUM 173	71 Lu LUTETIUM 175
89 Ac ACTINIUM 227*	90 Th THORIUM 232*	91 Pa PROTACTINIUM 231*	92 U URANIUM 238*	93 Np NEPTUNIUM 237*	94 Pu PLUTONIUM 244*	95 Am AMERICIUM 243*	96 Cm CURIUM 247*	97 Bk BERKELIUM 247*	98 Cf CALIFORNIUM 251*	99 Es EINSTEINIUM 252*	100 Fm FERMIUM 257*	101 Md MEHLIUM 258*	102 No NOBELIUM 259*	103 Lr LORENTZIUM 262*

\* The atomic weights listed on this Table of Elements have been rounded to the nearest whole number. As a result, this chart actually displays the mass number of a specific isotope for each element. An element's complete, unrounded atomic weight can be found on the IUPAC website: <http://iupac.org/pubs/atomicweights/>

# Los Alamos National Laboratory Chemistry Division

## Periodic Table of the Elements

1A 1 <b>H</b> Hydrogen 1.008																	8A 2 <b>He</b> Helium 4.003
3 <b>Li</b> Lithium 6.941	4 <b>Be</b> Beryllium 9.012											5 <b>B</b> Boron 10.81	6 <b>C</b> Carbon 12.01	7 <b>N</b> Nitrogen 14.01	8 <b>O</b> Oxygen 16.00	9 <b>F</b> Fluorine 18.998	10 <b>Ne</b> Neon 20.18
11 <b>Na</b> Sodium 22.99	12 <b>Mg</b> Magnesium 24.31											13 <b>Al</b> Aluminum 26.98	14 <b>Si</b> Silicon 28.09	15 <b>P</b> Phosphorus 30.97	16 <b>S</b> Sulfur 32.06	17 <b>Cl</b> Chlorine 35.45	18 <b>Ar</b> Argon 39.95
19 <b>K</b> Potassium 39.10	20 <b>Ca</b> Calcium 40.08	21 <b>Sc</b> Scandium 44.96	22 <b>Ti</b> Titanium 47.88	23 <b>V</b> Vanadium 50.94	24 <b>Cr</b> Chromium 52.00	25 <b>Mn</b> Manganese 54.94	26 <b>Fe</b> Iron 55.85	27 <b>Co</b> Cobalt 58.93	28 <b>Ni</b> Nickel 58.69	29 <b>Cu</b> Copper 63.55	30 <b>Zn</b> Zinc 65.38	31 <b>Ga</b> Gallium 69.72	32 <b>Ge</b> Germanium 72.64	33 <b>As</b> Arsenic 74.92	34 <b>Se</b> Selenium 78.96	35 <b>Br</b> Bromine 79.90	36 <b>Kr</b> Krypton 83.80
37 <b>Rb</b> Rubidium 85.47	38 <b>Sr</b> Strontium 87.62	39 <b>Y</b> Yttrium 88.91	40 <b>Zr</b> Zirconium 91.22	41 <b>Nb</b> Niobium 92.91	42 <b>Mo</b> Molybdenum 95.94	43 <b>Tc</b> Technetium 98.91	44 <b>Ru</b> Ruthenium 101.1	45 <b>Rh</b> Rhodium 102.9	46 <b>Pd</b> Palladium 106.4	47 <b>Ag</b> Silver 107.9	48 <b>Cd</b> Cadmium 112.4	49 <b>In</b> Indium 114.8	50 <b>Sn</b> Tin 118.7	51 <b>Sb</b> Antimony 121.8	52 <b>Te</b> Tellurium 127.6	53 <b>I</b> Iodine 126.9	54 <b>Xe</b> Xenon 131.3
55 <b>Cs</b> Cesium 132.9	56 <b>Ba</b> Barium 137.3	*	72 <b>Hf</b> Hafnium 178.5	73 <b>Ta</b> Tantalum 180.9	74 <b>W</b> Tungsten 183.8	75 <b>Re</b> Rhenium 186.2	76 <b>Os</b> Osmium 190.2	77 <b>Ir</b> Iridium 192.2	78 <b>Pt</b> Platinum 195.1	79 <b>Au</b> Gold 197.0	80 <b>Hg</b> Mercury 200.6	81 <b>Tl</b> Thallium 204.4	82 <b>Pb</b> Lead 207.2	83 <b>Bi</b> Bismuth 208.9	84 <b>Po</b> Polonium 209	85 <b>At</b> Astatine 210	86 <b>Rn</b> Radon 222
87 <b>Fr</b> Francium 223	88 <b>Ra</b> Radium 226	**	104 <b>Rf</b> Rutherfordium 261	105 <b>Db</b> Dubnium 262	106 <b>Sg</b> Seaborgium 263	107 <b>Bh</b> Bohrium 264	108 <b>Hs</b> Hassium 265	109 <b>Mt</b> Meitnerium 266	110 <b>Ds</b> Darmstadtium 267	111 <b>Rg</b> Roentgenium 268	112 <b>Cn</b> Copernicium 269	113 <b>Uut</b> Ununtrium (271)	114 <b>Fl</b> Flerovium (278)	115 <b>Uup</b> Ununpentium (288)	116 <b>Lv</b> Livermorium (293)	117 <b>Uus</b> Ununseptium (294)	118 <b>Uuo</b> Ununoctium (294)
Lanthanide Series*		57 <b>La</b> Lanthanum 138.9	58 <b>Ce</b> Cerium 140.1	59 <b>Pr</b> Praseodymium 140.9	60 <b>Nd</b> Neodymium 145.0	61 <b>Pm</b> Promethium 145	62 <b>Sm</b> Samarium 150.4	63 <b>Eu</b> Europium 152.0	64 <b>Gd</b> Gadolinium 157.3	65 <b>Tb</b> Terbium 158.9	66 <b>Dy</b> Dysprosium 162.5	67 <b>Ho</b> Holmium 164.9	68 <b>Er</b> Erbium 167.3	69 <b>Tm</b> Thulium 168.9	70 <b>Yb</b> Ytterbium 173.0	71 <b>Lu</b> Lutetium 174.9	
Actinide Series**		89 <b>Ac</b> Actinium 227	90 <b>Th</b> Thorium 232	91 <b>Pa</b> Protactinium 231	92 <b>U</b> Uranium 238	93 <b>Np</b> Neptunium 237	94 <b>Pu</b> Plutonium 244	95 <b>Am</b> Americium 243	96 <b>Cm</b> Curium 247	97 <b>Bk</b> Berkelium 247	98 <b>Cf</b> Californium 251	99 <b>Es</b> Einsteinium 252	100 <b>Fm</b> Fermium 257	101 <b>Md</b> Mendelevium 258	102 <b>No</b> Nobelium 259	103 <b>Lr</b> Lawrencium 260	