Section 5-2 Periodic Table

Periodic Families

Group 1 – Alkali Metals

Group 2 – Alkaline Earth Metals

Group 3-12 – Transition Metals

Group 13 – Boron Family

Group 14 – Carbon Family

Group 15 – Nitrogen Family

Group 16 – Oxygen Family

Group 17 – Halogens

Group 18 – Noble Gases

4f – Lanthanides

5f – Actinides

1

Section 5-2 (Cont'd 2)

Alkali Metals [ns^1]
– silvery
– soft, can be cut with a knife
– extremely reactive, reacts with water, air, and nonmetals
– they are not found as pure elements in nature
– Li, Na, and K are all less dense than water

Alkaline-Earth Metals [ns^2]
– harder, denser and stronger than alkalis
– not as reactive as alkalis, but still very reactive
– they are not found as pure elements in nature

2

Section 5-2 (Cont'd 3)

Hydrogen and Helium
– they do not have p orbitals
– they do not fit properly with rest of periodic table

Transition Metals [$ns^2(n-1)d^{(1-10)}$]
– good conductors of electricity
– tend to have a high luster
– typically less reactive than alkali and alkaline-earth elements
– many are found in pure form
– some are the most dense of all elements (ex. Os and Ir)
– some are least reactive elements
– some break Aufbau principle

3

Section 5-2 (Cont'd 4)

The s-block and p-block elements are called either:
– Main Group Elements
– Representative Elements

p-Block Elements [$ns^2np^{(Group-12)}$]
– vary greatly in properties
– top and right is nonmetals
– bottom and left is metals
– all metalloids run diagonally from top left to bottom right of block

Metalloids
– brittle solids
– have some properties of metals and nonmetals
– semiconductors of electricity

4

Section 5-2 (Cont'd 5)

Halogens [ns^2np^5]
– most reactive nonmetals
– react with most metals to form compounds called salts
– fluorine and chlorine are gases
– bromine is a reddish liquid
– iodine is a volatile purple solid
– astatine is unstable

p-Block Metals
– harder, more dense, and less reactive than group 2 metals.
– softer, less dense, and more reactive than transition metals.
– usually found in nature as a compound
– stable in air once purified

5

Section 5-2 (Cont'd 6)

Lanthanides and Actinides
– once called rare-earth elements
– there are 14 or 15 in each series
– lanthanides have similar reactivity to group 2 elements
– actinides are all radioactive
– elements after U (92) are called transuranium and are synthetic
– trace amounts of neptunium and plutonium have been found in uranium ore due to beta decay

6