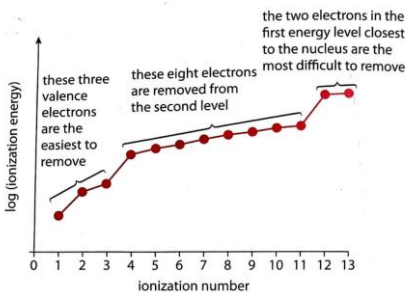
Name: _____ Date: _____ Period: _____

HL IB Chem 1 Periodic Trends - Guided Notes

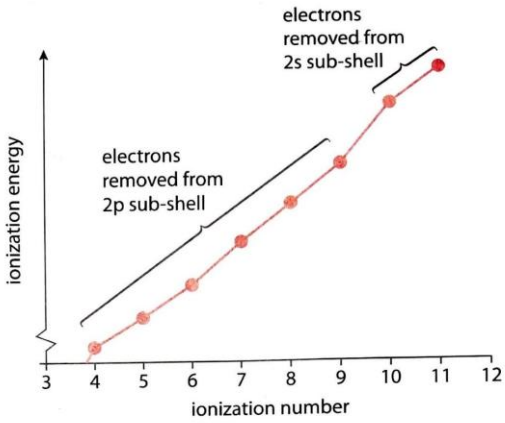
Slide 3: Ionization energies give evidence for energy levels

- There is an increase in _____ ionization energies (it becomes more difficult to to remove more electrons because the attraction between the nucleus and electrons is stronger.
- There are "jumps" when _____ are removed from levels closer to the nucleus (evidence for different energy levels)
- _____ energies for Aluminum



Slide 4: Ionization energies give evidence for sublevels

- There is a "jump" in energy between the 9th and 10th _____ energies. (correspond to the 10th and 11th electron removed).
- Shows the 11th electron is more _____ to remove than others in that energy level.
- _____ the presence of a **sub-level**.
- _____ energies for Aluminum



Slide 5: Ionization energies give evidence for sublevels

- 4th IE
- 5th IE
- 6th IE
- 7th IE
- 8th IE
- 9th IE
- 1st IE
- 2nd IE
- 3rd IE
- Removing the first three electrons (4th, 5th, 6th _____ energies) from the 2p sublevel requires less energy than removing the

4th electron (7th ionization energy)

- _____ are paired in the 4th, 5th and 6th IE so have electron-pair repulsion (takes less energy to remove).

Slide 6: Important Vocabulary

- **Periodicity:** Elements in the Periodic Table are arranged to show how the properties of the elements repeat _____.
- **Nuclear Charge:** given by the atomic number of the nucleus and increases by one between _____ elements of the Periodic Table
- **Shielding:** When electrons don't _____ the full attraction of nuclear charge due to presence of inner electrons.
- **Atomic Radius:** The distance from an atom's nucleus to its _____ electron shell.
- **Ionic Radius:** The distance from an ion's nucleus to its _____ electron shell.
- **Electron Affinity ($\Delta H°_{ea}$):** energy change when one mole of electrons is added to one mole of gaseous atoms to form one mole of gaseous ions (aka how much energy it takes to form a negatively charged ion). The first electron affinity is generally exothermic (releases energy) while subsequent electron affinities are _____ (require energy).
- **_____:** a measure of the ability of an element's atoms to attract electrons.
- **_____ energy:** the energy required to remove one mole of electrons from one mole of gaseous atoms in their ground state