Bonding

Chapter 4 in textbook

Essential ideas:

* Ionic compounds consist of ions held together in lattice structures by ionic bonds
* Covalent compounds form by the sharing of electrons
* Lewis (electron dot) structures show the electron domains in the valence shell and are used to predict molecular shape
* The physical properties of molecular substances result from different types of forces between their structures
* Metallic bonds involve a lattice of cations with delocalized electrons

Objectives:

* Recognize the formulas of ionic compounds
* Understand how ions are formed and recall the formulas of some common ions
* Work out the formulas of ionic compounds from the charges on the ions
* Describe the structure of sodium chloride as an example of an ionic lattice
* Explain the physical properties of ionic compounds in terms of structure and bonding
* Understand that a covalent bond is formed when electrons are shared
* Understand the relationship between bond strength and bond length
* Understand what is meant by electronegativity
* Predict whether a bond will be polar or not
* Understand what is meant by a coordinate covalent bond
* Work out Lewis structures for molecules and ions
* Work out the shapes of molecules and ions with up to four electron domains
* Predict bond angles in molecules and ions
* Predict whether a molecule will be polar or non-polar
* Describe the structures and bonding of giant covalent substances
* Explain the physical properties of giant covalent substances in terms of structure and bonding
* Understand how intermolecular forces arise
* Understand how physical properties of covalent molecular substances depend on the intermolecular forces
* Predict relative boiling points of substances
* Describe the structure of, and bonding in, metals
* Explain some of the properties of metals in terms of structure and bonding
* Explain what is meant by an alloy and how the properties of alloys are different from those of pure metallic elements

Agenda:

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| Date | In class | HW |
| 10/21-10/26 | Review types of bonding  Properties of Metals lab | Read pages 106-115, 124-127, 149, 150-152 |
| 10/27-10/28 | Tests back  Review and turn in lab  Lewis structures  Lots of practice | p. 130 , 137, 140-141 (pay attention to the charts)  Practice worksheet |
| 10/29-10/30 | Review HW  VSEPR  polarity  Modeling kit lab activity | p. 116-123  Finish lab  TBD |
| 11/2-11/3 | Review HW  Polarity, IMF  Properties of liquids activity | p.144-149  TBD |
| 11/4-11/5 | Review HW  Finish IMF  Colligative properties lab (bring a spoon and toppings to share) | TBD |
| 11/6-11/9 | Review HW  More IMF practice  Alloys | TBD |
| 11/10-11/16 | Putting it all together: charts/ summaries, lots of examples | Study |
| 11/17-11/18 | ASSESSMENT |  |

Test Review sessions: 11/16 3:05-3:45PM

11/17 7:20-8:00AM