

## **Chapter 4-1**

### **Ionic Bonds**

- Ion: an atom that gains a charge when it loses an electron (positively-charged) or gains an electron (negatively-charged).
- Ionic Bond: force of attraction between the positive and negative ions formed by the transfer of electrons from the positive to the negative.

- Polyatomic Ion: ion with more than one atom.





- Polar molecules have covalent bonds where the electrons are shared unequally. The molecules are attracted towards each other because of the slightly negative and positive charges.

- Non-polar molecules have covalent bonds where the electrons are shared equally.

- Detergent cleaning oil.

## Chapter 4-3 Crystals

- Mineral: any naturally-occurring, solid, inorganic, crystal structure with definite chemical composition
- Properties to identify minerals: hardness, density, crystal shape, magnetism, shininess, color, how they break; some properties can be seen and others tested.  
Note: Properties depend on the arrangement of the particles and the type of bond in the mineral, which means their chemical composition.
- Mineral Crystals: ionic crystals have weaker bonds between their molecules than the molecular crystals.

<b>Halite</b>	<b>Quartz</b>
Ionic	Molecular
Breaks regularly along the charges	Breaks irregularly
Dissolves in water	Doesn't dissolve in water
Scratched by steel	Can't be scratched by steel