

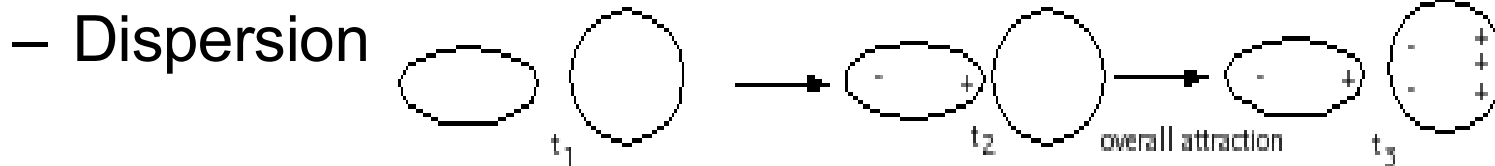
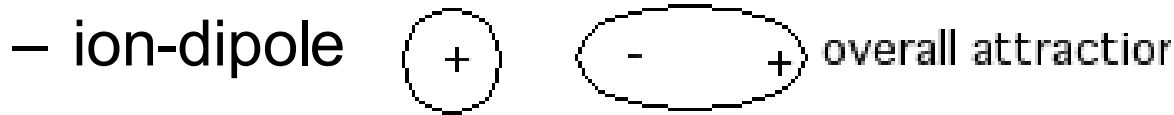
Announcements

To join clicker to class today
(Clickers with LCD display
join automatically):

- Turn on the Clicker (the red LED comes on).
 - Push “Join” button followed by “20” followed by the “Send” button (switches to flashing green LED if successful).
- Exam scores have been posted.
 - Please check all your scores and let me know of errors.
- Please continue to wear appropriate clothing to lab.

Review

- attractive interactions among molecules:



- Hydrogen bonding (directional partial bond, on H bonded to N, O or F). $\text{H-F} \cdots \text{H-F} \cdots \text{H-F}$ and $\begin{array}{c} \text{O-H} \cdots \text{O-H} \\ | \quad | \\ \text{H} \quad \text{H} \end{array}$

- Attractions explain properties of liquids (surface tension, meniscus, capillary action).

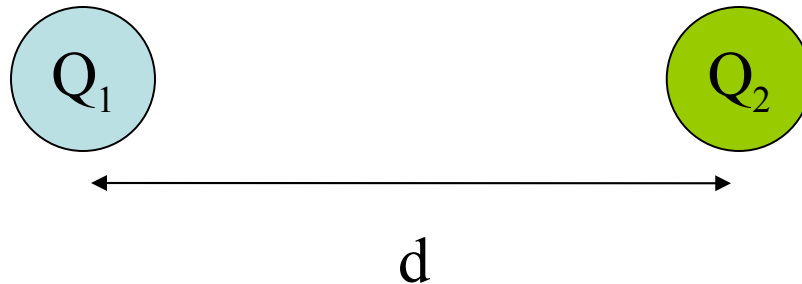
Ion-Ion interactions

Coulomb's Law (2 charged particles):

$$E = 2.31 \times 10^{-19} \text{ J}\cdot\text{nm}(q_1q_2/d)$$

q_i is charge on particle in coulomb

d is distance between center of charges in nm



Crystal Lattice

Chang Fig. 12.14

Chang fig. 12.21

Lattice Energy

- Coulomb's Law (2 charged particles):

$$E = 2.31 \times 10^{-19} \text{ J}\cdot\text{nm}(q_1q_2/d)$$

- Lattice Energy U (crystal lattice of charged particles):

$$U=k(q_1q_2/d)$$

- U is energy per mole of formula units (e.g. mole of NaCl or CaCl₂, etc)
 - k = a constant that accounts for geometry and the factor of N_A
- Definition: U = the energy given up when enough gaseous ions combine to form one mole of the solid.

Solvation/Hydration of Ions

Chang Fig 4.2