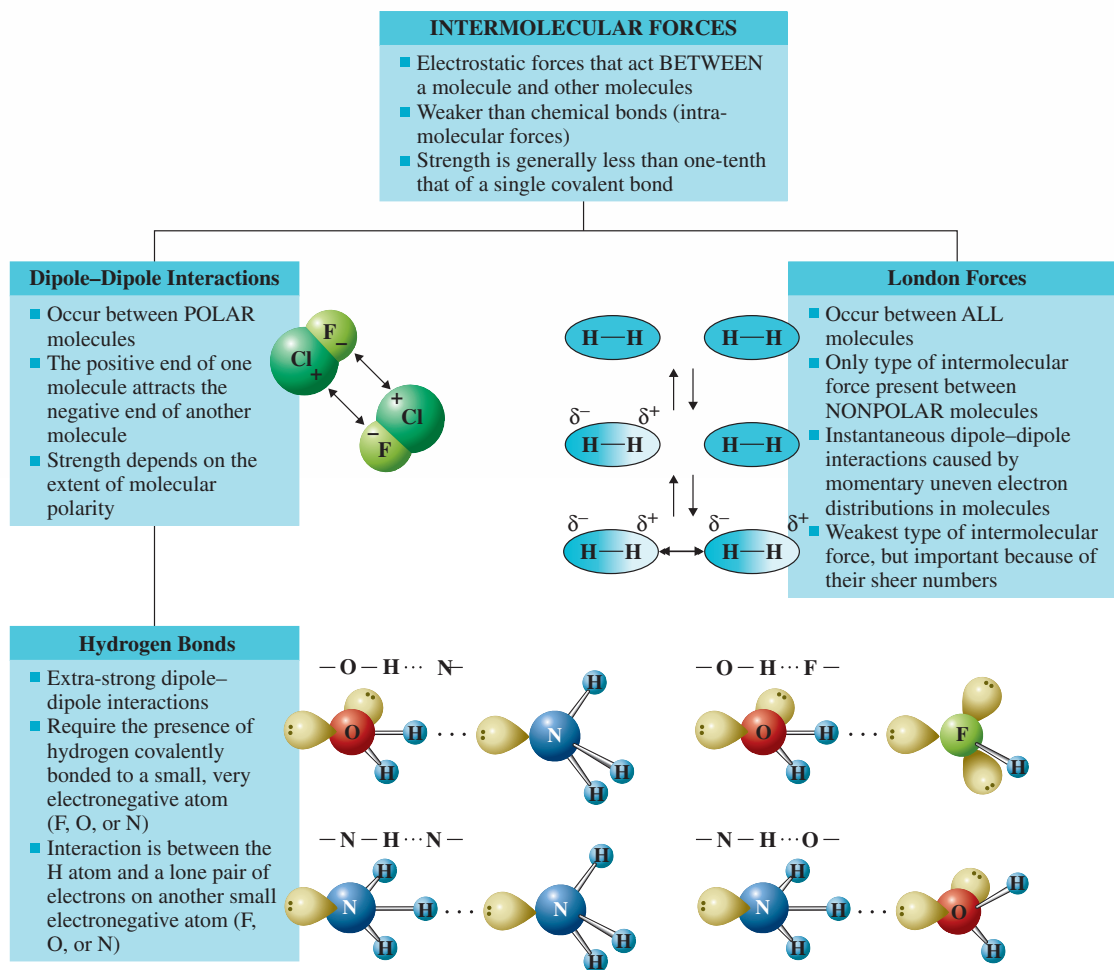


CHEMISTRY AT A GLANCE

Intermolecular Forces



adjoining molecules and causes these molecules also to become polar (*induced polarity*). The original polar molecule and all of the molecules with induced polarity are then attracted to one another. This happens many, many times per second throughout the liquid, resulting in a net attractive force. Figure 7.24 depicts the situation that prevails when London forces exist.

As an analogy for London forces, consider what happens when a bucket filled with water is moved. The water will “slosh” from side to side. This is similar to the movement of electrons. The “sloshing” from side to side is instantaneous; a given “slosh” quickly disappears. “Uneven” electron distribution is likewise a temporary situation.

The strength of London forces depends on the ease with which an electron distribution in a molecule can be distorted (polarized) by the polarity present in another molecule. In large molecules, the outermost electrons are necessarily located farther from the nucleus

The boiling points of substances with similar molar masses increase in this order: nonpolar molecules < polar molecules with no hydrogen bonding < polar molecules with hydrogen bonding.