

Chapter 5, Lesson 3

Teacher Background, p. 364

Non-polar molecules can attract each other

Lessons 1–3 focus on the principle that molecules attract one another based on their polarity. This principle is true but polarity is not the only cause of attraction between molecules. It may seem strange but even non-polar molecules attract one another. Non-polar molecules such as the molecules in mineral oil or gasoline attract each other and stay together as a liquid. The non-polar molecules of paraffin attract each other and stay together as solid wax.

Non-polar molecules can attract each other based on the movement of electrons within their atoms. The negatively charged electrons are in constant motion in regions around the positively charged protons. But at any given instant, there can be a slight and fleeting imbalance in the electrons on one side of an atom than another. This makes one side of an atom temporarily slightly positive and the other side temporarily slightly negative.

The slightly negative side can repel electrons from a nearby atom in another molecule creating a temporary positive area in that atom. These negative and positive areas attract each other and help hold the molecules together. These types of attractions are called dispersion forces. Non-polar molecules containing a greater number of atoms tend to be held together more strongly than non-polar molecules with fewer atoms. This is because there are more opportunities for *dispersion forces* to attract the molecules.