The charges on ions and the charge separation in polar molecules explain the fairly strong interactions between them, with very strong ion - ion interactions, weaker ion - dipole interactions, and considerably weaker dipole-dipole interactions. Even in a non-polar molecule, however, the valence electrons are moving around and there will occasionally be instances when more are on one side of the molecule than on the other. This gives rise to fluctuating or instantaneous dipoles:

![Figure 1: Fluctuating Dipole in a Non-polar Molecule](image)

These instantaneous dipoles may be induced and stabilized as an ion or a polar molecule approaches the non-polar molecule.
Figure 2: (Left) Ion - Induced Dipole Interaction. (Right) Dipole - Induced Dipole Interaction

Contributors and Attributions

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