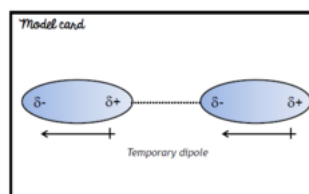




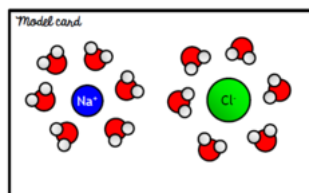
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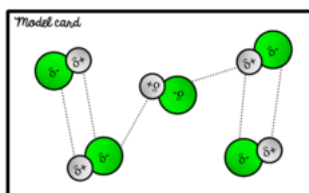
1. Model - London Dispersion



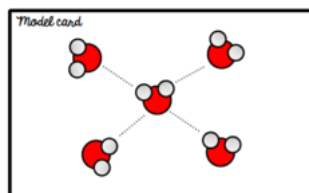
2. Model - Ion Dipole



3. Model - Dipole-Dipole



4. Model - Hydrogen Bonding



5. Description - London Dispersion

Weak forces that result from temporary shifts in density of electrons in electron clouds.

6. Description - Dipole-Dipole

Attractions between oppositely charged regions of polar molecules.

7. Description - Hydrogen Bonding

Special dipole-dipole attractions that occur between molecules containing a hydrogen atom covalently bonded to a small, highly electronegative atom (N, O, F) and the lone pair of electrons on another molecule containing N, O, or F.

8. Description - Ion-Dipole

The result of an electrostatic interaction between a charged ion and a molecule that has a dipole.

9. Strength - London Dispersion

Greater attraction results as the size of the molecule or atom increases. This is due to greater polarizability of the electron cloud.



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| 10. Strength - Dipole - Dipole | For small molecules, this intermolecular force is stronger than dispersion forces. |
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| 11. Strength - Hydrogen Bonding | Stronger than dispersion and dipole-dipole forces due to the large electronegativity difference in the bonds and small size of the hydrogen atom. |
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| 12. Strength - Ion-Dipole | It is an attractive force that is commonly found in ionic compounds dissolved in polar liquids. |
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| 13. Example - London Dispersion | H ₂ |
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| 14. Example - Dipole-Dipole | Hydrochloric acid, HCl |
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| 15. Example - Hydrogen Bonding | Hydrofluoric acid, HF |
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| 16. Example - Ion-Dipole | Sodium chloride (NaCl) dissolved in water. |
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| 17. Intermolecular forces | Forces of attraction and repulsion between molecules |
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| 18. Intramolecular forces | Forces between atoms (bonds) |
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| 19. Forces between substrate & enzyme | dipole-dipole |
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| 20. Forces that cause a protein to fold | dipole-dipole attraction and nonpolar-dipole repulsion |
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| 21. Miscible | forming a homogeneous mixture when added together (dissolving evenly) |
|---------------------|---|
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22. **Immiscible** liquids that do not form a homogenous mixture when added together (do not mix)
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23. **Nonpolar solutes are soluble in** nonpolar solvents
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24. **Polar solutes are soluble in** polar solvents
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25. **Ions are soluble in** polar solvents
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26. **"Like dissolves like"** Substances with charges (dipoles & ions) dissolve in other substances with charges. Substances without charges (nonpolar) dissolve in substances without charges.
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27. **Boiling point definition** Boiling point is the temperature at which a substance changes from liquid to gas at standard pressure.
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28. **Boiling point and intermolecular forces** Substances with higher boiling points have stronger intermolecular forces
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29. **Freezing point definition** the temperature at which a liquid turns into a solid when cooled.
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30. **Freezing point and intermolecular forces** Substances with higher freezing points have stronger intermolecular forces
-
31. **Surface tension definition** the attractive forces between particles on the surface of a substance that tend to be arranged in a shape with the least surface area.
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32. **Surface tension and intermolecular forces** Higher surface tension requires stronger intermolecular forces
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33. **Capillary action** the tendency of a liquid in a capillary tube or absorbent material to rise or fall as a result of surface tension.
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34. **Vapor pressure definition** the pressure exerted by a vapor on the surface of a liquid.

35. **Vapor pressure and intermolecular forces** Lower vapor pressure requires stronger intermolecular forces

36. **Stronger London Dispersion forces** More electrons, larger electron cloud, larger molecule or atom
