

2. Two polar bonds and two lone pairs of electrons on the oxygen causes a negative dipole at the oxygen and positive dipoles on the hydrogens. This allows for hydrogen bonding between molecules – strong intermolecular bond.

Molecules held together H-bonds are difficult to separate, therefore needing more energy (heat) to change states from liquid to gas, allowing them to stick together creating surface tension and stick to other molecules (adhesion).

3. Water will separate the ions. The Br^- ions will be attracted to and surrounded by the hydrogens in water since they have a partially positive charge (dipole). The K^+ ions will be surrounded by the negative dipoles of water.

4. No, octane is non-polar. There would be no H-bonds or dipole-dipole bonds forming between octane and water.

5. Polar substances dissolve in water because they both have dipoles with would be attracted to and bond with one another.

Questions

1. Water is a polar molecule. Explain how the polarity of water accounts for its lattice structure. 10.
2. How does the structure of water account for its properties, such as its boiling point, surface tension, and adhesion? 11.
3. Potassium bromide, KBr , is an ionic compound. Describe what happens to its ions when it is dissolved in water. 12.
4. Will water form a surface coat around a molecule such as octane, $\text{CH}_3(\text{CH}_2)_6\text{CH}_3$ (Figure 7)? Explain. 13.

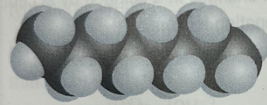


Figure 7

5. How does polarity influence water's role as a solvent? 14.
6. How do acids and bases differ in terms of how they behave when added to pure water? 15.
7. What determines whether an acid or a base is classified as strong or weak? Explain your answer. 16.
8. Why is it important that we help to maintain the proper pH of our environment? Make a connection between the proper pH of our environment and your life and surroundings. 17.
9. How do buffers in your cells help to keep your body functioning properly? 18.