Hydrogen bonding in Water



In organic compounds hydrogen bonding is very important for describing the boiling and solubility characteristics of alcohols and acids, and the concept will be given in more detail in chapters dealing with those types of molecules.



As you proceed through organic chemistry you will write many different structures, and the writing gets easier with practice. But in the beginning it can be confusing. Always remember that carbon has four bonds!

In writing an alkane such as pentane which has five carbon atoms. We could write it by just showing carbon atoms, but it does not show carbon with four

1.2 Sections 1.2a shows the electronic configuration for the 2nd row elements. Show the electronic configuration for the third row elements. Common ions in the 3rd row are Na⁺¹, Mg⁺², Al⁺³, Si⁺⁴, P⁺⁵, S⁻², Cl⁻¹. What characteristic of their electronic configurations do these ions share that accounts for their stability? **1.3** The dipole moment (μ) of a molecule is the vector sum of the dipole moments of the individual bonds. In some cases these sums cancel each other while in other cases they enhance each other. Given the bond moments of H-C (0.4) and C-Cl

and CCl4. 1.4 For the compounds below write the complete structure and designate the

(1.5), predict the dipole moment, and thus the polarity, of CH₃Cl, CH₂Cl₂, CHCl₃

bonding in each bond. a) ethane, CH₃CH₃ b) propene, CH₃CH=CH₂ c) propyne

1.5 Hydrogen bonds in alcohols and carboxylic acids have a bond strength of 8-10 kcal/mole. The energy required to break these bonds explains the higher by of hydrogen bonded substances. a) Use a chemical handbook to find the boiing points of the following compounds to see the effect of hydrogen bolding on the boiling point.



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1.7 Use the internet to locate several interesting sites for organic chemistry.