5.3 Organic Compounds



- Organic compounds contain carbon and usually hydrogen.
 - "Organic" sounds like the compounds come from living things, but some do, and some do not.
 - Inorganic compounds are compounds that do not have carbon.
 - Carbon has four electrons in its valence shell, which allows for more chemical bonding possibilities than any other element.
 - Long chains of carbons form petroleum and plastics.
 - Organic molecules always have C before H in their formulas.
 - This differentiates organic compounds from acids, which almost always start with H.

and morganic compounds		
Organic: Must Contain Carbon		Inorganic Containing Carbon
CH ₄	methane (a hydrocarbon)	CaCO ₃ , Na ₂ CO ₃ (carbonates)
CH ₃ CH ₂ OH	ethanol (an alcohol)	Al ₄ C ₃ , SiC (carbides)
с ₆ н5соон	benzoic acid (an organic acid)	CO, CO ₂ (oxides)
K ₂ HC ₆ H ₅ O ₇	potassium citrate	Inorganic Not Containing Carbon
	(an organic salt)	FeCl ₂
C ₈ H ₁₀ N ₄ O ₂	caffeine (a stimulant)	(NH ₄) ₂ SO ₃
СН ₃ _(СН ₂) _n _СН ₃	polyethylene (a plastic) where $n = 5000$ and the CH ₂ unit repeats about 5000 times	PBr ₃

 Table 5.7 Comparing Formulas of Organic Compounds

 and Inorganic Compounds

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Hydrocarbons and Alcohols



- A hydrocarbon is an organic compound that contains only carbon and hydrogen.
 - Hydrocarbons are based on a carbon chain, with hydrogen atoms added on the sides.
 - The simplest hydrocarbons are:
 - methane (CH₄)
 - ethane (C₂H₆)
 - propane (C₃H₈)
 - butane (C₄H₁₀)
 - pentane (C₅H₁₂)
 - All hydrocarbons are flammable, and most are liquids are room temperature.

See pages 246 - 247

Take the Section 5.3 Quiz

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Hydrocarbons and Alcohols



- Alcohols are organic compounds with C, H, and O.
 - The simplest alcohols are methanol (CH₄O), ethanol (C₂H₆O), and isopropyl alcohol (C₃H₈O).
 - Alcohols are very good solvents (they dissolve other substances).
 - Alcohols are generally very flammable.
 - Naming of alcohols is similar to Alkanes (the list on the last slide), except we add an "-ol" ending
 - Methanol (CH₃OH)
 - Ethanol (C₂H₅OH)
 - Propanol (C₃H₇OH)
 - Butanol (C₄H₉OH)
 - Pentanol (C₅H₁₁OH)

See pages 246 - 247

Take the Section 5.3 Quiz

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