

S3 Chemistry

Unit 2.1b Alkanes

8	Alkanes are a homologous series of saturated hydrocarbons (saturated means single bonds only)						
- are commonly used as fuels - are insoluble in water - can be represented by the general formula C_nH_{2n+2}							
9a 10a	Alkanes with straight chains have the following structure:						
	Alkane	Molecular Formula	Shortened Formula	Structural Formula			
	Methane	CH_4	CH_4	<pre> H H-C-H H</pre>			
	Ethane	C_2H_6	CH_3CH_3	<pre> H H H-C-C-H H H</pre>			
	Propane	C_3H_8	$CH_3CH_2CH_3$	<pre> H H H H-C-C-C-H H H H</pre>			
	Butane	C_4H_{10}	$CH_3CH_2CH_2CH_3$	<pre> H H H H H-C-C-C-C-H H H H H</pre>			
	Pentane	C_5H_{12}	$CH_3CH_2CH_2CH_2CH_3$	<pre> H H H H H H-C-C-C-C-C-H H H H H H</pre>			
	Hexane	C_6H_{14}	$CH_3CH_2CH_2CH_2CH_2CH_3$	<pre> H H H H H H H-C-C-C-C-C-C-H H H H H H H</pre>			
	Heptane	C_7H_{16}	$CH_3CH_2CH_2CH_2CH_2CH_2CH_3$	<pre> H H H H H H H H-C-C-C-C-C-C-C-H H H H H H H H</pre>			
	Octane	C_8H_{18}	$CH_3CH_2CH_2CH_2CH_2CH_2CH_2CH_3$	<pre> H H H H H H H H H-C-C-C-C-C-C-C-C-H H H H H H H H H</pre>			

9b 10b	Alkanes can also have a branched chain structure. Some examples include:					
	<pre> H H H C H H H - C - C - C - C - H H H H H </pre> 2-methylbutane	<pre> H H H H H H - C - C - C - C - C - H H H C H H H </pre> 3-methylpentane	<pre> H H H C H H H - C - C - C - C - H H H C H H H H H </pre> 2,2,3-trimethylbutane			
	<pre> H H H C H H H - C - C - C - C - H H H C H H </pre> 2,2-dimethylbutane	<pre> H H H C H H H - C - C - C - H H H C H H </pre> 2,2-dimethylpropane	<pre> H H H C H H H - C - C - C - C - H H H C H H </pre> 2,3-dimethylbutane			
	<pre> H H H C H H H - C - C - C - C - C - H H H C H H C H H H </pre> 2,2,4-trimethylpentane	<pre> H H H C H H H - C - C - C - C - C - H H H C H H </pre> 2,3-dimethylpentane	<pre> H H H C H H H - C - C - C - H H H C H H </pre> 2-methylpropane			