

Chemguide – questions

ALKANES: INTRODUCTION

- What is the formula for
 - butane,
 - hexane,
 - propane,
 - an alkane with 18 carbon atoms?
 - Draw the structure for
 - cyclopentane
 - methylcyclohexane
- Draw the structural isomers for C_6H_{14} .
- What physical states (solid, liquid or gas) would you expect the following alkanes to exist in at room temperature? In each case, assume we are talking about the “straight chain” isomer.
 - C_8H_{18}
 - C_4H_{10}
 - $C_{12}H_{26}$
 - $C_{19}H_{40}$
 - $C_{15}H_{32}$
- The boiling points of the isomers of C_5H_{12} are

	B Pt (K)
pentane	309.2
2-methylbutane	301.0
2,2-dimethylpropane	282.6

- What are the forces attracting pentane molecules to their neighbours in liquid pentane?
- Explain why the boiling point becomes lower as the isomer becomes more branched.

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5.
 - a) Explain why pentane is insoluble in water.
 - b) Explain why pentane and hexane will dissolve in each other in all proportions.

6.
 - a) Explain why alkanes have a fairly limited range of reactions.
 - b) Cycloalkanes also mostly have a limited range of reactions for the same reasons that you should have discussed in part (a). However, cyclopropane is much more reactive than the others. Why?