

Question 2

Using London dispersion forces arrange n-pentane, propane, n-butane, 2-methylpropane, in terms of their boiling points.

Answer:

We know that the four elements are non-polar and alkanes. Therefore, the only intermolecular forces important here are the dispersion forces. As the molecular mass of the compound increases the forces between them get more robust. Consequently, we can easily say that propane having the smallest molecular mass, will have the lowest boiling point. Similarly, since n-pentane has the largest molecular mass, the boiling point will be the highest. When we compare the two butane isomers, n-butane has a larger surface area; as it has an extended shape, therefore, its boiling point will be more than 2-methylpropane.