

Alkanes: Thermal cracking

You don't have to know the mechanism for cracking, but it's useful practice.

Some reactions are more likely than others. For example, a C–C bond is more likely to break than a C–H bond because the standard bond enthalpy of a C–C bond is less than that of a C–H bond (see table below). Similarly, some new bonds are more likely to form than others.

average standard bond enthalpy (kJ mol ⁻¹)	
C–C	348
C=C	612
C–H	412
H–H	436

Think about the thermal cracking of pentane, C₅H₁₂. Work out possible steps for:

1. Chain initiation
2. Chain propagation
3. Chain termination

Identify possible products of the chain termination step.

Draw structural formulae for the organic products that you have identified, and try to name them.

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