A simple homolysis is a homolysis caused by the energy applied directly. A simple homolysis is not accompanied by formation of any bonds and, therefore, is always endothermic.

\[
\text{\begin{align*}
\ce{A-B} + \text{energy} & \rightarrow \ce{A} + \ce{B} \\
\Delta H^o &= +
\end{align*}}
\]

eg. 1:

\[
\begin{align*}
\ce{Cl-Cl} & \xrightarrow{\Delta} 2\ce{Cl}.
\end{align*}
\]

eg. 2:

\[
\begin{align*}
\ce{\text{(CH}_{3}\text{)}_{2}\text{Cl}} & \xrightarrow{\Delta} 2\ce{\text{(CH}_{3}\text{)}_{2}}\text{Cl}.
\end{align*}
\]

eg. 3:

\[
\begin{align*}
\ce{H_{3}C-CH_{3}} & \xrightarrow{\Delta} 2\ce{H_{3}C}.
\end{align*}
\]

Standard enthalpy of a simple homolysis is equal to the bond dissociation energy of the bond broken.

eg:

\[
\begin{align*}
\ce{Cl-Cl} & \xrightarrow{\Delta} 2\ce{Cl}.
\end{align*}
\]

\[
\text{BDE } \Delta H^o = (\ce{Cl-Cl}) = + 59 \text{ kcalmol}^{-1}
\]

see also assisted homolysis

Contributors

- Gamini Gunawardena from the OChemPal site (Utah Valley University)