A dihedral angle or torsional angle (symbol: $\theta$) is the angle between two bonds originating from different atoms in a Newman projection.

e.g: staggered conformation of ethane

\[
\begin{array}{c}
\text{H}_1 \\
\text{H}_6 \\
\text{H}_5 \\
\text{H}_3 \\
\text{H}_2 \\
\end{array}
\]

The angle between any blue C-H bond (C-H$_1$, C-H$_2$, C-H$_3$) and any red C-H bond (C-H$_4$, C-H$_5$, C-H$_6$) is a dihedral angle. Thus, the angle between C-H$_1$ and C-H$_4$, which is 60º, is a dihedral angle.

Geometrically, a dihedral angle is an angle between two intersecting planes. For example, the dihedral angle between C-H$_1$ and C-H$_4$ in the above Newman projection is the angle between the plane bisecting C-H$_1$ and that bisecting C-H$_4$, both perpendicular to the plane of the screen.

see also bond angle

Contributors and Attributions

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