Chiral Center, chiral atom, chirality center, or center of chirality is a tetrahedral atom in a molecule bearing four different ligands, with lone pairs, if any, treated as ligands.

eg. 1:

\[ \text{CH}_2\text{CO}_2\text{H} \]

\[ \text{tetrahedral} \rightarrow \text{four different ligands} \rightarrow \text{chiral center} \]

eg. 2:

\[ \text{CH}_3\text{O} \]

\[ \text{tetrahedral} \rightarrow \text{four different ligands} \rightarrow \text{chiral center} \]

eg. 3:

\[ \text{CH}_3\text{N}\text{H}_2 \]

\[ \text{tetrahedral} \rightarrow \text{four different ligands} \rightarrow \text{chiral center} \]

If a chiral center is a carbon atom, it can also be called an asymmetric carbon atom. Thus, in eg. 1 the chiral center is an asymmetric carbon atom.

The term stereocenter, also called stereogenic center, is often used synonymously with the term chiral center. However, the term stereocenter has a different definition, according to which all chiral centers are stereocenters but not all stereocenters are chiral centers.

Contributors

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