The relative configuration at a carbon-carbon double bond in an organic molecule is a time-independent and unambiguous symbolic description of arrangement of the two ligands on each doubly bonded carbon with respect to that of the other.

eg:

\[
\begin{align*}
\text{1} & : \quad \begin{array}{c}
\text{a} \quad \text{a} \\
\text{b} \quad \text{b}
\end{array} \\
\text{2} & : \quad \begin{array}{c}
\text{a} \quad \text{b} \\
\text{b} \quad \text{a}
\end{array}
\end{align*}
\]

In 1 the like ligands are on the same side of the double bond. Therefore, the double bond in 1 is said to be a cis double bond. In 2, the like ligands are on the opposite sides of the double bond. Therefore, the double bond in 2 is said to be a trans double bond. To arrive at these conclusions one has to consider the arrangement of ligands on both doubly bonded carbons. Hence the descriptors cis and trans are said to specify the relative configuration at the double bonds in 1 and 2, respectively.

In order to use the descriptors cis and trans to specify the relative configuration at a carbon-carbon double bond at least one ligand must be common to both doubly bonded carbons (\(abC = Cad\)). E, Z-convention provides an alternative, more broadly applicable method to specify the relative configuration at a carbon-carbon double bond.

see also absolute configuration

**Contributors**

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