If the net change in a reaction is the replacement of a ligand on a chiral center in a reactant molecule, and, if in the product the replacement ligand occupies the same site on the chiral center as the replaced ligand did in the reactant, the reaction is said to occur with retention of configuration.

eg. 1:

The net reaction is the replacement of bromine atom on the chiral center in 1 with an alcohol group. In the product (2) the alcohol group occupies the same site on the chiral center as the bromine atom in 1. Therefore, the reaction occurs with retention of configuration (see neighboring group participation for mechanism.)

eg. 2:

The net reaction is the replacement of hydroxymethyl group (—CH\_2OH) on the chiral center in 3 with a chloromethyl group (—CH\_2Cl). In the product (4), the chloromethyl group occupies the same site on the chiral center as the hydroxymethyl group in 3. Therefore, the reaction occurs with retention of configuration. Retention of configuration in this reaction is a result of the chiral center in the reactant not participating in the reaction.

see also inversion of configuration

Contributors

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