International Union of Pure and Applied Chemistry

Compendium of Chemical Terminology

Gold Book

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chirality axis

Synonym: axis of chirality

An axis about which a set of ligands is held so that it results in a spatial arrangement which is not superposable on its mirror image. For example with an allene abC=C=Ccd the chiral axis is defined by the C=C=C bonds; and with an *ortho*-substituted biphenyl the atoms C-1, C-1', C-4 and C-4' lie on the chiral axis.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2203

chirality centre

Synonym: centre of chirality

An atom holding a set of ligands in a spatial arrangement which is not superposable on its mirror image. A chirality centre is thus a generalized extension of the concept of the asymmetric carbon atom to central atoms of any element, for example N^+abcd, Pabc as well as Cabcd.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2203

chirality element

Synonym: element of chirality

General name for a chirality axis, chirality centre or chirality plane. Also referred to as an element of chirality.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2203

chirality plane

A planar unit connected to an adjacent part of the structure by a bond which results in restricted torsion so that the plane cannot lie in a symmetry plane. For example with (*E*)-cyclooctene the chiral plane includes the double bond carbon atoms and all four atoms attached to the double bond; with a monosubstituted paracyclophane the chiral plane includes the monosubstituted benzene ring with its three hydrogen atoms and the three other atoms linked to the ring (i.e. from the substituent and the two chains linking the two benzene rings).

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2203

diastereoisomer (diastereoisomeric) excess

Also contains definition of: percent diastereoisomer excess

This is defined by analogy with enantiomer excess, as $D_1 - D_2$ [and the percent diastereoisomer excess as $100\ (D_1 - D_2)$], where the mole fractions of two diastereoisomers in a mixture or the fractional yields of two diastereoisomers formed in a reaction are D_1 and D_2 ($D_1 + D_2 = 1$) The term is not applicable if more than two diastereoisomers are present. Frequently this term is abbreviated to d.e.
See: stereoselectivity, diastereoisomerism

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2205

diastereoisomeric units

in a polymer

Two non-superposable configurational units that correspond to the same constitutional unit are considered to be diastereomeric if they are not mirror images.

Source:
Purple Book, p. 27

diastereoisomerism

Also contains definitions of: diastereoisomers, diastereomers

Stereoisomerism other than enantiomerism. Diastereoisomers (or diastereomers) are stereoisomers not related as mirror images. Diastereoisomers are characterized by differences in physical properties, and by some differences in chemical behaviour towards achiral as well as chiral reagents.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2205
PAC, 1994, *66*, 1077 *(Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994))* on page 1105

diastereoisomerization

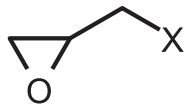
The interconversion of diastereoisomers.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2205

Source:
PAC, 1992, *64*, 143 *(Glossary for chemists of terms used in biotechnology (IUPAC Recommendations 1992))* on page 153

epihalohydrins

Compounds having the (halomethyl)oxirane skeleton:



Source:
PAC, 1995, *67*, 1307 *(Glossary of class names of organic compounds and reactivity intermediates based on structure (IUPAC Recommendations 1995))* on page 1334

epimerization

Interconversion of epimers.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2208
PAC, 1994, *66*, 1077 *(Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994))* on page 1114

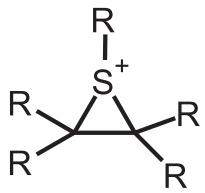
epimers

Diastereoisomers that have the opposite configuration at only one of two or more tetrahedral stereogenic centres present in the respective molecular entities.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2208
PAC, 1994, *66*, 1077 *(Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994))* on page 1113

episulfonium ions

Ions derived from thiiranes, in which a trivalent sulfur atom bears a positive charge:



isomer

One of several species (or molecular entities) that have the same atomic composition (molecular formula) but different line formulae or different stereochemical formulae and hence different physical and/or chemical properties.

Source:
PAC, 1994, *66*, 1077 *(Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994))* on page 1129
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2210

isomer shift

in Mössbauer spectroscopy

Measure of the energy difference between the source (E_s) and the absorber (E_a) transition. The measured Doppler velocity shift, δ, is related to the energy difference by

$$E_a - E_s = \frac{\delta E_\gamma}{c}$$

where E_γ is the Mössbauer gamma energy and c is the speed of light in vacuum.

Source:
PAC, 1976, *45*, 211 *(Nomenclature and Conventions for Reporting Mossbauer Spectroscopic Data)* on page 214

isomerases

Enzymes that catalyse intramolecular rearrangements. Isomerases are classified into racemases and epimerases, *cis-trans* isomerases, intramolecular lyases and other isomerases.

Source:
PAC, 1992, *64*, 143 *(Glossary for chemists of terms used in biotechnology (IUPAC Recommendations 1992))* on page 158

isomeric

Adjective derived from isomer.

Source:
PAC, 1996, *68*, 2193 *(Basic terminology of stereochemistry (IUPAC Recommendations 1996))* on page 2210

isomeric state

in nuclear chemistry

A nuclear state having a mean life long enough to be observed.

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