If, in a reaction, stereoisomeric (see stereoisomers) reactants gives stereoisomeric products, the reaction is said to be stereospecific.

eg. 1:

Reactions 1 and 2 are $S_N_2$ reactions of stereoisomeric substrates 1 and 2 with the same nucleophile, leading to stereoisomeric substitution products 3 and 4, respectively. Thus, $S_N_2$ reactions are stereospecific.

eg. 2:

Reactions 3 and 4 are Diels-Alder reactions of stereoisomeric dienophiles 5 and 6 with the same diene, 1,3-butadiene. The products of the reaction of 5 is 7; the products of the reaction of 6 are 8 and 9. 7 and 8 are stereoisomers, so are 7 and 9. Thus, Diels-Alder reactions are stereospecific.

see stereoselective

Contributors

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