

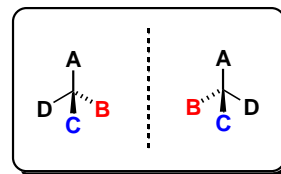
Chemistry I (Organic): Stereochemistry

Overview (2011-12)

Prof Alan Spivey; Office: 835 C1; e-mail: a.c.spivey@imperial.ac.uk; Tel.: 45841

Aims

To provide an introduction to the shapes of organic molecules and the basic principles and nomenclature of stereogenic elements in organic molecules.



Summary

Molecular shape, symmetry and stereogenicity/chirality are central concepts for chemistry. They allow us to understand the spectroscopic properties of molecules and their reactivity with other molecules including large biopolymers (e.g. proteins and nucleic acids). This course will introduce and review these fundamental concepts and extend the ideas presented in Dr Sophia Yaliraki's 'spectroscopy workshop' (Autumn term). The course material should provide an underpinning for *all* your forthcoming organic courses and also the intersectional spectroscopy course given by Dr's Charlotte Williams and Sophia Yaliraki (Autumn Term).

Objectives:

On completion of this course you should be able to:

- distinguish chiral molecules from achiral ones.
- assign (*R*)- and (*S*)-descriptors to stereogenic centres in chiral molecules.
- appreciate the difference between enantiomers and diastereomers.

Course delivery (4 lectures)

- Lecture 1:** will examine hybridisation and shape.
- Lecture 2:** will cover stereogenic centres and other stereogenic elements in *enantiomers*.
- Lecture 3:** will cover Fischer projections, (*R*) & (*S*) notation and Cahn-Ingold-Prelog (CIP) priority rules.
- Lecture 4:** will cover CIP priority rules for axially chiral molecules & introduce *diastereoisomers*, epimers and *meso* stereoisomers.

Reference material

For 3D Jmol models of molecules referred to in the lectures see link @ <http://www.ch.ic.ac.uk/spivey/?q=firstyear>

The following texts both contain information pertinent to the course content.

J. Clayden, N. Greeves, S. Warren and P. Wothers, *Organic Chemistry*, Oxford University Press, **2001**.
E.L. Eliel, S. H. Wilen, *Stereochemistry of Organic Compounds*, Wiley-Interscience, **1994**.
