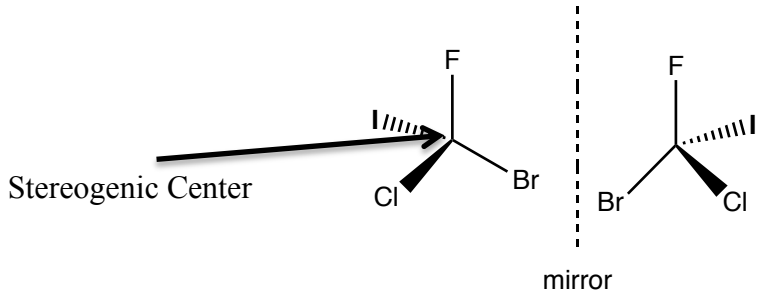
NEXT SECTION: Lecture Outline 3: Stereochemistry and Chirality

Introduction to Stereochemistry and Chirality (terminologies)

Chiral object or molecule: has a non-superimposable mirror image
Achiral object: not chiral, has a superimposable mirror image

Tetrahedral carbon with 4 different groups are said to be **CHIRAL** and are said to contain a **STEREOGENIC (CHIRAL) CENTER**



1850 - Louis Pasteur separated the "right-handed" and "left-handed" forms of tartaric acid crystals (from wine)

1876 - J. van't Hoff and Le Bel proposed that differences are due to tetrahedral geometry of carbon
- Kolbe did not receive van't Hoff's idea very well
1901 - J. van't Hoff was the first recipient of the Nobel Prize in Chemistry

Stereochemistry and Chirality

Chiral object or molecule: has a non-superimposable mirror image
Achiral object: not chiral, has a superimposable mirror image

Resolution - Separation of right and left-handed forms (enantiomers)

Enantiomers: molecules that are stereoisomers and are non-superimposable mirror images of each other. Physical properties of enantiomers are the same, as far as they are measured in an achiral environment. A chiral agent of molecule is necessary to distinguish them.

Diastereomers: stereoisomers that are not enantiomers.