CHEM 261 October 07, 2020

**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**



Stereogenic 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.