

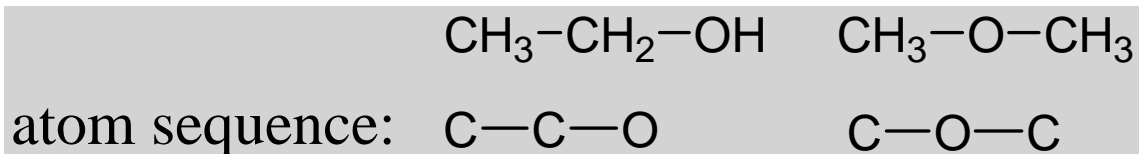
Isomerism

(Examine Isomer Tree Diagram on Chem 231 resource page)

Two types

A. **Structural Isomers**- molecular formula is the same but “atom connectivity” is different.

- The atoms are bonded in different sequence, for example, compare dimethyl ether with ethanol (C₂H₆O)



- The placement of double (or triple) bond(s) are different, for example, compare 1-butene with 2-butene (C₄H₈)



The “atom connectivity” for 1-butene contains a double bond between C1 and C2 BUT the atom connectivity for 2-butene contains a single bond between C1 and C2

Compare also 1-pentyne with 2-pentyne (C₅H₈)



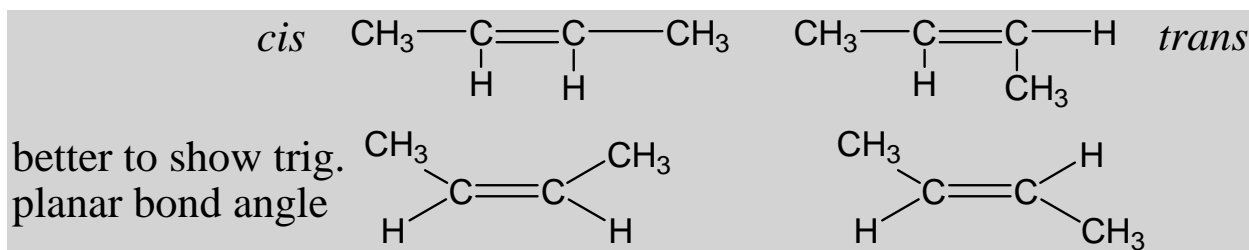
B. **Stereoisomers**- molecular formula is the same, atom connectivity is the same, location of double bond is the same, BUT, the position of atoms in 3-D space is different.

Stereoisomers are either **diastereomers** or **enantiomers**

Cis/trans isomers (aka geometric isomers) are diastereomers

There must be a double bond or a ring to exhibit cis/trans isomerism.

➤ For example, examine 2-butene:



➤ Examine cyclic examples:

