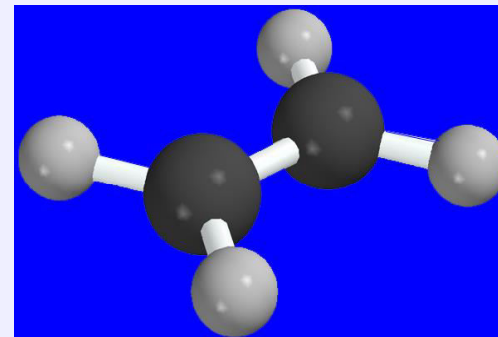


Alkenes (Olefin)

- Unsaturated hydrocarbons that have double bonds and end with the suffix “ene”
- General formula is C_nH_{2n}
- Functional group in alkenes is a hydrogen atom in presence of double bond.
- **Example: Ethelene**

bond angles: $H-C-H = 117^\circ$, $H-C-C = 121^\circ$

bond distances: $C-H = 110 \text{ pm}$, $C=C = 134 \text{ pm}$

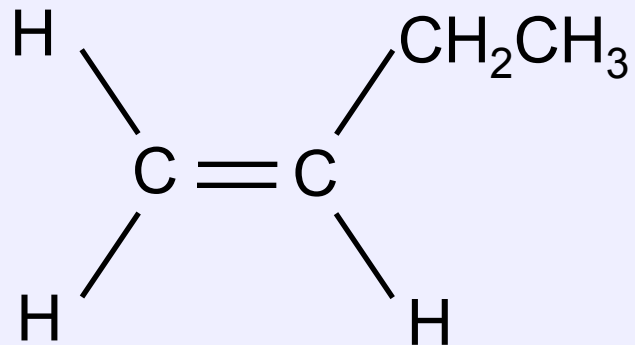


Name the following

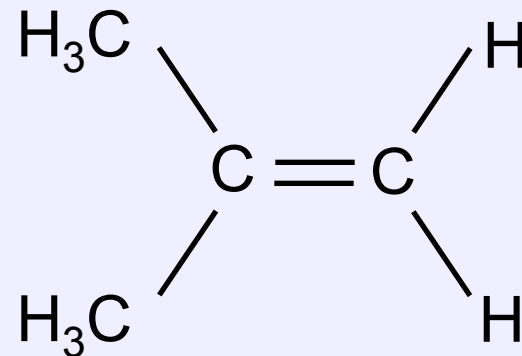


5-methyl-2-hexene

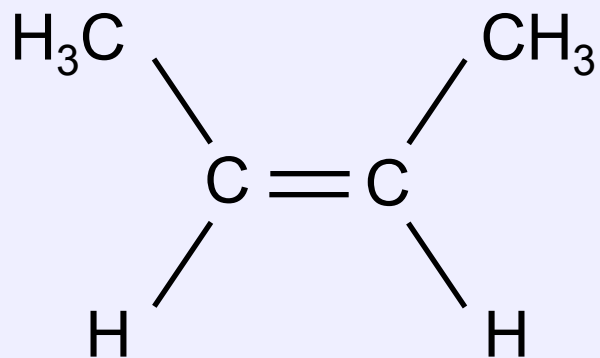
isomeric alkenes of C_4H_8



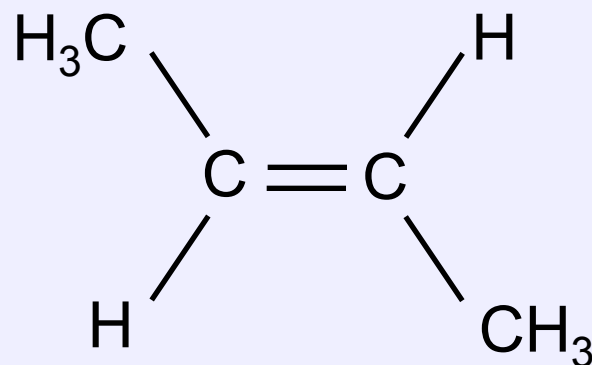
1-Butene



2-Methylpropene



cis-2-Butene

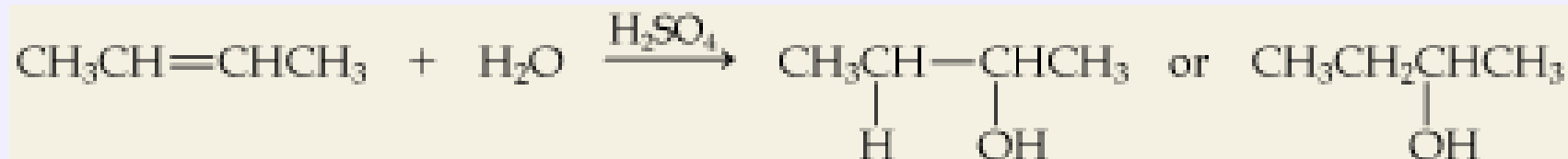
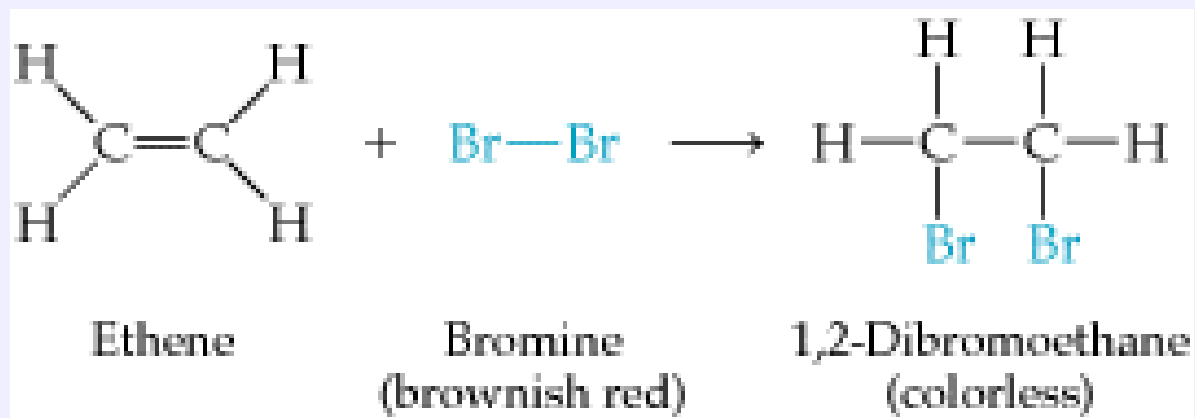


trans-2-Butene

Properties of Alkenes

- Similar to alkanes
- Occur widely in nature
- React with addition reactions

Addition Reaction: two molecules combine to give one molecule.



Alkynes

- Unsaturated hydrocarbons contain at least one triple bond between two carbon atoms.
- General formula is C_nH_{2n-2} and their name ends with the suffix (yne)

- **EX. Acetylene**



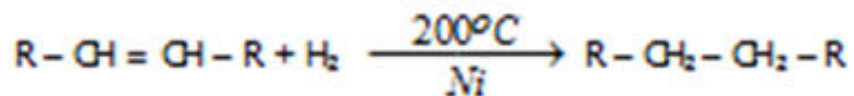
- Their properties similar to those of alkanes and alkenes.
- They react with addition reactions as alkene.
- **Name the following:**



4,4-dimethyl-2-pentyne

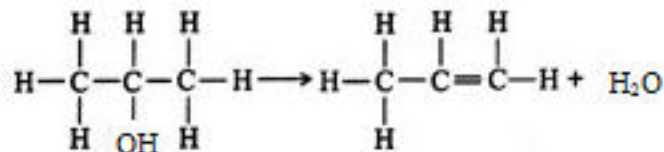
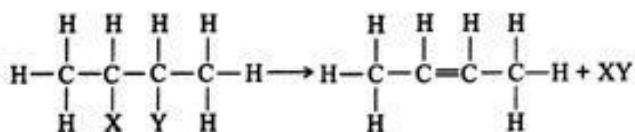
Preparation of Hydrocarbons

1- Preparation of Alkanes: From catalytic hydrogenation of Unsaturated Hydrocarbons in the presence of catalyst such as Ni, Pt or Pd at 150 – 200° C.



2- Preparation of Alkenes: from β elimination reactions, in which two atoms on adjacent carbon atoms are removed.

Example of that elimination reaction is: Dehydration of alcohols, the dehydrohalogenation of alkyl halides, and the dehalogenation of alkanes.



3- Preparation of Alkynes: from β elimination reactions

