



**petroleum chemistry**  
**Chemical engineering department**  
**Al-Mustaqbal-college**  
**First class**  
**second semester**  
**Lecture six**  
**By**  
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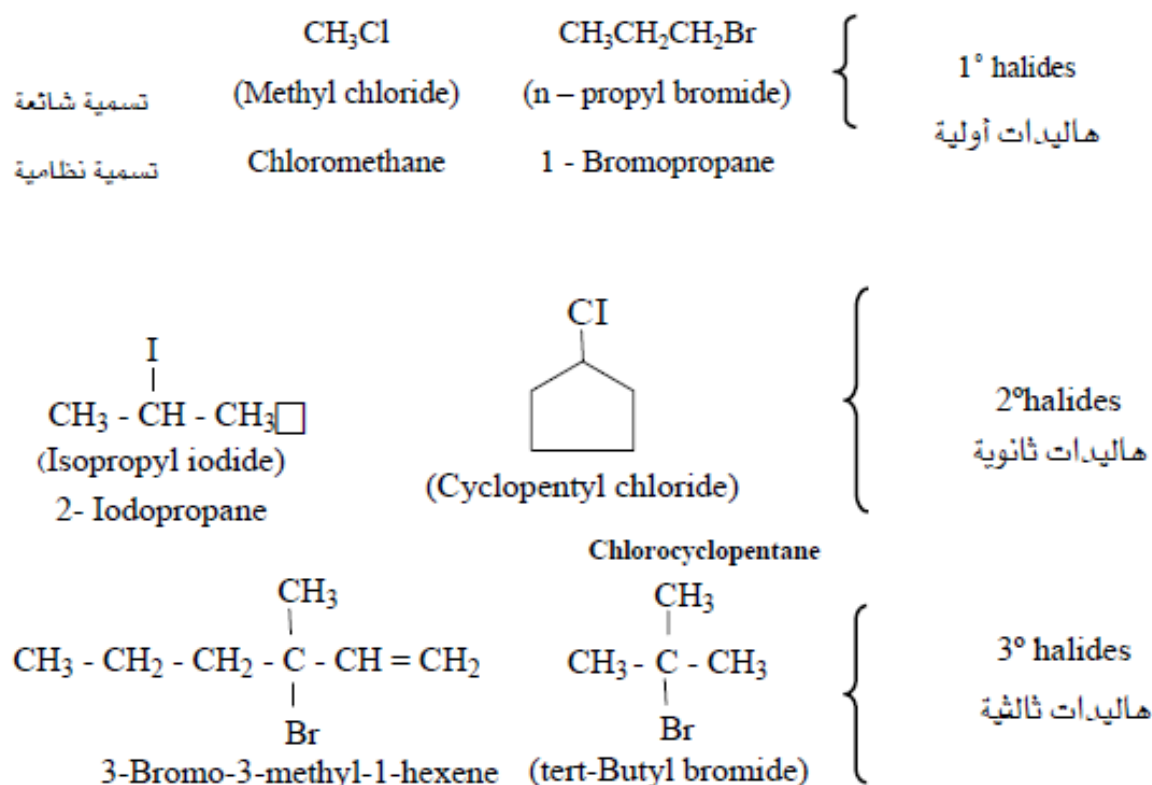
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## Lecture six

# Organic halid compounds

Organohalid are hydrocarbons containing one or more halogen atoms. They are derived from alkanes or aromatic compounds, and take the general formula R - X, where R represents an alkyl or aryl group, and X represents a halogen atom, and aromatic halides are less reactive than alkyl halides, so we will limit our study to only alkyl halides.

Halides are divided into three types according to the type of carbon atom attached to the halide: primary alkyl halides, secondary alkyl halides, and tertiary alkyl halides. The alkyl halides can be called in one of two ways: the common method and the ordinary method. For nomenclature in the common way, write the name alkyl, alkyl, followed by a word indicating the type of halogen (this designation will appear in parentheses).



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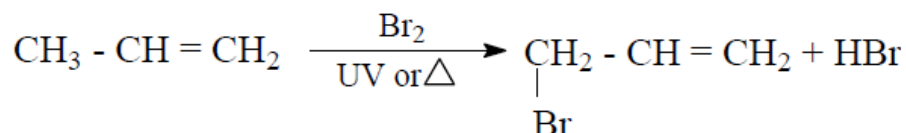
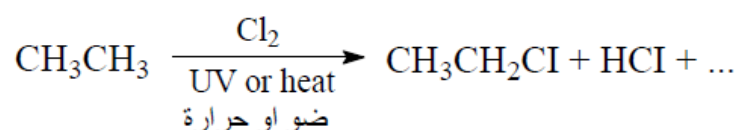
### Physical properties of organic halide compounds

Alkyl organohalides are characterized by high boiling points due to the polarity of these molecules. Iodine, bromine and compounds that carry more than one fluorine atom and more than one chlorine atom have a higher density than water.

### Preparation of organic halide compounds

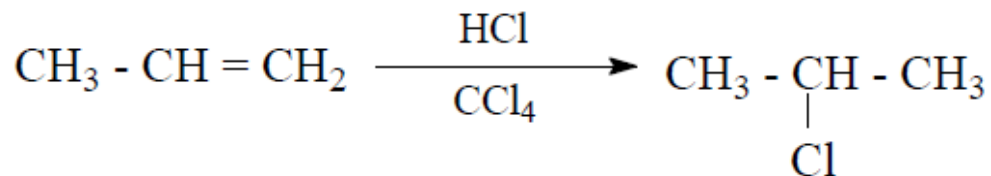
#### 1- Direct halogenation of saturated carbon chains (substitution reactions)

Carbon atoms saturated with chlorine or bromine are halogenated under appropriate conditions, where the hydrogen atom is replaced and the organic halide is formed.



#### 2- Addition of hydrogen halides to alkene and alkynes

Hydrogen halides, such as chloride or hydrobromide, are added to the double bond in alkenes according to Markovnikov's rule according to the following equation:



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### 3- Substitution of the hydroxyl group in alcohols (substitution reactions)

Alkyl halides are also prepared by reacting alcohols with hydrogen halides GX and sulfur halides such as  $\text{SOCl}_2$  or phosphorous halides ( $\text{PCl}_5$ ,  $\text{PCl}_3$ ,  $\text{PBr}_3$ ) according to the following equations:

