

HALOALKANES AND HALOARENES

16-05-2020 Lecture-6

Chemistry
Class -XII
Unit -10

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DENSITY

Bromo, iodo and polychloro derivatives of hydrocarbons are heavier than water.

Density = $\frac{\text{Mass}}{\text{Volume}}$; Hence, the density increases.

With increase in number of carbon atoms, Halogen atoms and atomic mass of the halogen atoms.

SOLUBILITY

Haloalkanes are slightly soluble in water. The energy is required to overcome the attraction between the haloalkane molecule and break the hydrogen bonds between water molecules.

Less energy is released when new attractions are set up between haloalkanes and water molecules as these are not as strong as the original hydrogen bonds in water.

As a result, the solubility of haloalkanes in water is low.

X Haloalkanes are soluble in organic solvent.

CHEMICAL REACTIONS

The reactions of haloalkanes may be divided into the following categories.

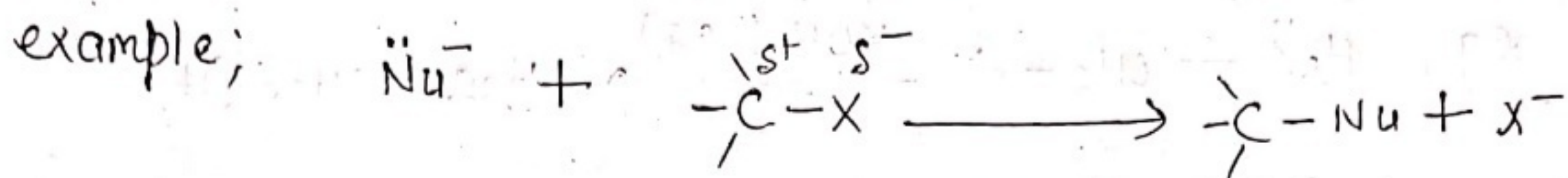
1. Nucleophilic substitution
2. Reaction with metals
3. Elimination reactions.

NUCLEOPHILIC SUBSTITUTION

In this type of reaction, a nucleophile reacts with haloalkane having a partial positive charge on the carbon atom bonded to halogen.

X A substitution reaction occurs, and halogen atom is departed as halide ion.

* Since the substitution reaction is initiated by a nucleophile, it is called nucleophilic substitution reaction.

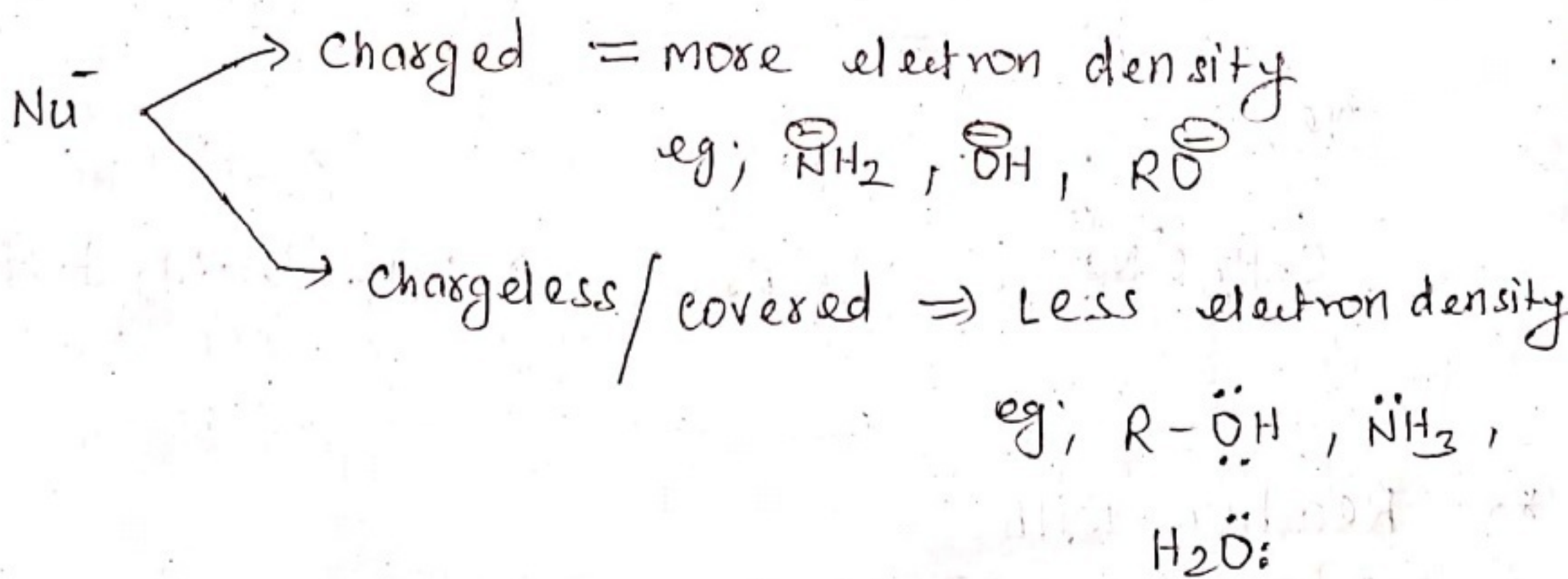


NUCLEOPHILE

Electron rich species is known as nucleophile.

* Nucleophile is generally denoted by $\ddot{\text{Nu}}^-$.

$\ddot{\text{Nu}}^-$ (Nucleophile) are of two types :-



Some examples of Nucleophilic Substitution of Alkyl halides (R-X).

Reaction with aq. NaOH / aq. KOH

