

B.Sc. (Honours) Part-I

Paper-I

Topic: Electronegativity

UG

Subject-Chemistry

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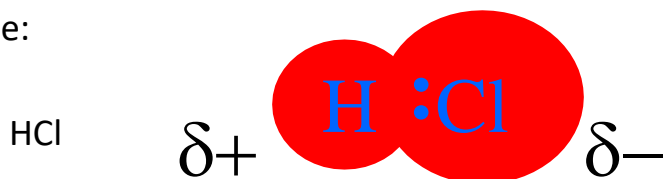
Electronegativity

Bonding between **unlike atoms** results in unequal sharing of the electrons.

- One atom pulls the electrons in the bond closer to its side.
- One end of the bond has larger electron density than the other. The result is a POLAR BOND

The end with the larger electron density gets a partial negative charge (δ^-) and the end that is electron deficient gets a partial positive charge (δ^+).

Example:



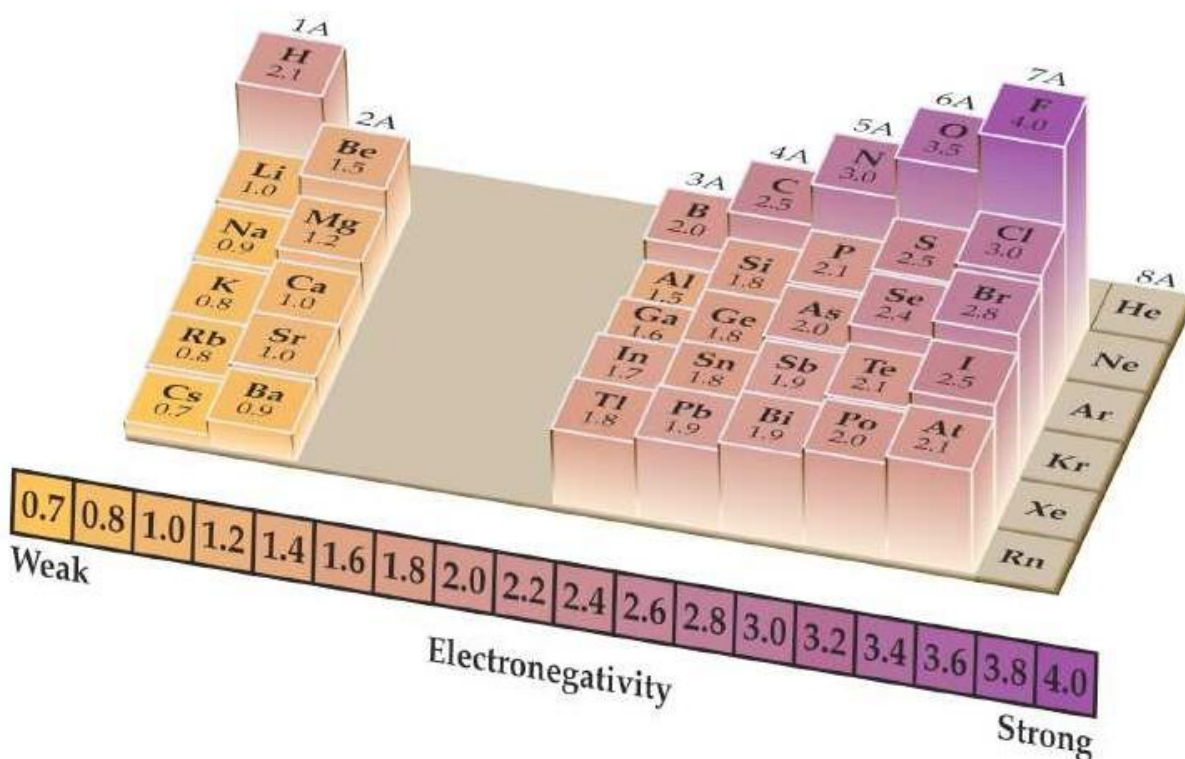
Electronegativity

How can we determine which atom is $\delta+$ and which is $\delta-$ in a polar bond?

- Use electronegativity values of the atoms

Electronegativity

Electronegativity is a measure of **relative attraction** that an atom has for the **shared electrons in a covalent bond**



Electronegativity

- **Increases** across the period (left to right)
- **Decreases** down the group (top to bottom)

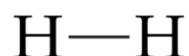
The larger the difference in electronegativity, the more polar the bond.

Main Classes of Chemical Bonds

Nonpolar Covalent Bond

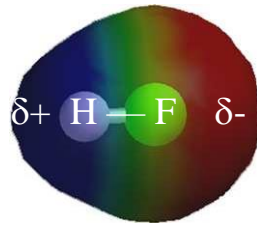
- Electronegativity difference between zero and 0.4
- Many times between two identical atoms

Example:



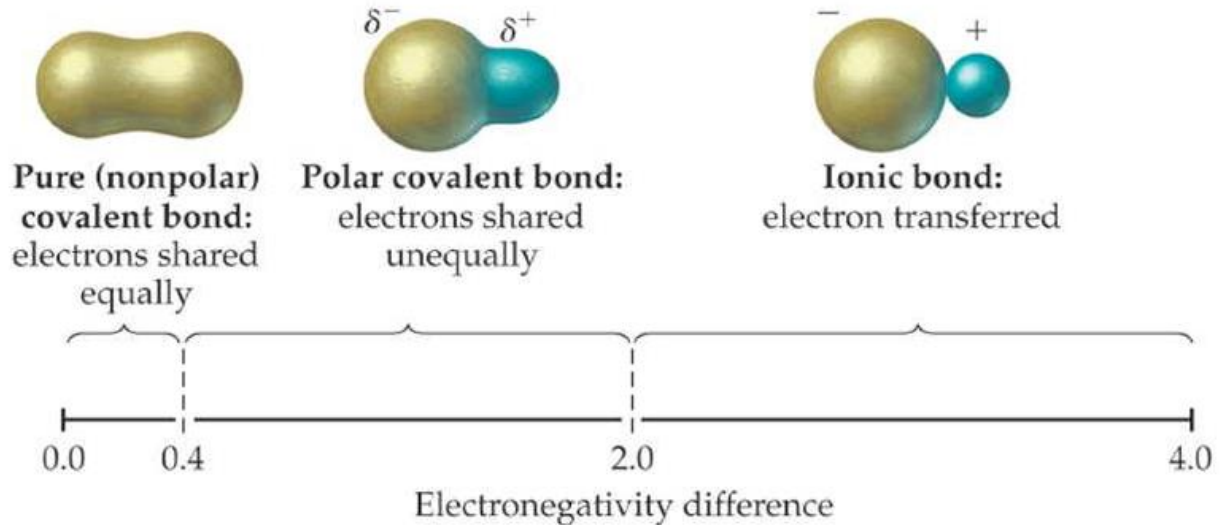
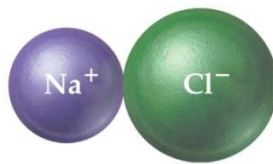
Polar Covalent Bond

- Electronegativity difference between 0.4 and 2
- Between two different NONMETAL atoms



Ionic Bond

- Electronegativity difference is greater than 2



- Primarily exists between METALS and NONMETALS

