

CHE201 GDB

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ADMIN ALL ABOUT BIOTECH-AAB

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QUESTION

Why hydrogen fluoride (HF) exhibit higher boiling point as compared to hydrogen chloride(HCL)?

ANSWER:

Hydrogen fluoride (HF) exhibits a higher boiling point compared to hydrogen chloride (HCl) due to differences in their intermolecular forces and molecular structures.

The boiling point of a substance is primarily influenced by the strength of the attractive forces between its molecules. In the case of HF and HCl, both molecules are polar, meaning they have a separation of positive and negative charges within the molecule.

However, hydrogen fluoride (HF) has a higher boiling point than hydrogen chloride (HCl) due to the presence of stronger intermolecular forces. HF molecules can form stronger hydrogen bonds with each other compared to the dipole-dipole interactions present in HCl.

Hydrogen bonding occurs when a hydrogen atom is bonded to an electronegative atom (in this case, fluorine), and it forms a weak bond with another electronegative atom (another fluorine atom). The hydrogen bond is an electrostatic attraction between the partially positive hydrogen atom and the partially negative atom of another HF molecule.

In contrast, hydrogen chloride (HCl) does not form hydrogen bonds to the same extent. While it is also polar, the electronegativity difference between hydrogen and chlorine is smaller compared to hydrogen and fluorine, resulting in weaker dipole-dipole interactions.

These stronger hydrogen bonds in HF require more energy to break, leading to a higher boiling point compared to HCl.

Note: Do some changing according to your requirements. Don't copy paste it.