

- Ammonia (NH_3) has a boiling point of $-33\text{ }^\circ\text{C}$ and phosphine (PH_3) has a boiling point of $-83\text{ }^\circ\text{C}$. Explain the difference in these boiling points in terms of the intermolecular forces present.

Although PH_3 is a larger molecule with greater dispersion forces than ammonia, NH_3 has very polar N-H bonds leading to strong hydrogen bonding. This is the dominant intermolecular force and results in a greater attraction between NH_3 molecules than there is between PH_3 molecules.