30. \[ \text{CH}_3 - \text{C} = \text{O} - \text{H} \rightarrow \text{C} - \text{CH}_3 \]

32. If a molecule has polar bonds, the shape of the molecule is the deciding factor which determines if the bond dipoles cancel.

Examples are \( \text{CO}_2 \) and \( \text{H}_2 \text{O} \) which cancel out.

\[ \text{CH}_4 \quad \text{all cancel out.} \]

34. (a) \( \text{CH}_3 \text{Cl}_3 \) has a permanent dipole moment, contains dipole-dipole forces and London forces.

(b) \( \text{O}_2 \) does not have a dipole moment so only has London forces.

(c) polyethylene - only has London Dispersion Forces.

(d) \( \text{CH}_3 \text{OD} \) - Hydrogen Bonds / Dipole-Dipole / London Dispersion
35.
(a) Xe has no dipole-dipole interactions
(b) HF has the largest hydrogen bond forces.
(c) Xe has the largest dispersion forces.

37.
(a) C₈H₁₈ has the larger dispersion forces because of its long hydrocarbon chain
(b) HF has the larger dispersion forces because of the larger, more polarizable iodine
(c) H₂Se has the larger dispersion forces because of the more polarizable & less electronegative Se.
3.38.

(a) \[ \text{net} \]

(b) \[ \text{net dipole moment} = 0 \]

(c) \[ \text{net} \]

(d) \[ \text{net dipole} = 0 \]

10.42.

Hydrogen Bond.