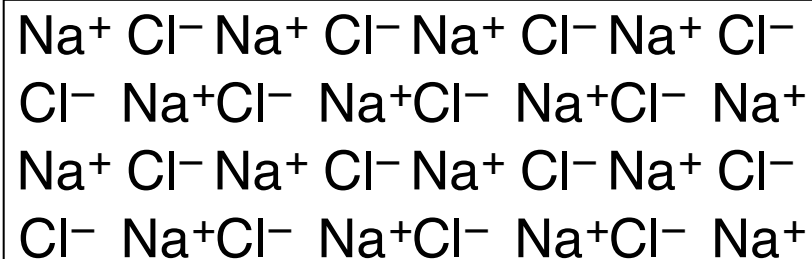


II. Intermolecular Forces and Chemical Properties (of organic compounds)

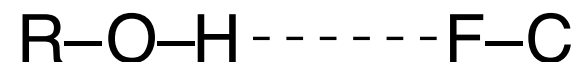
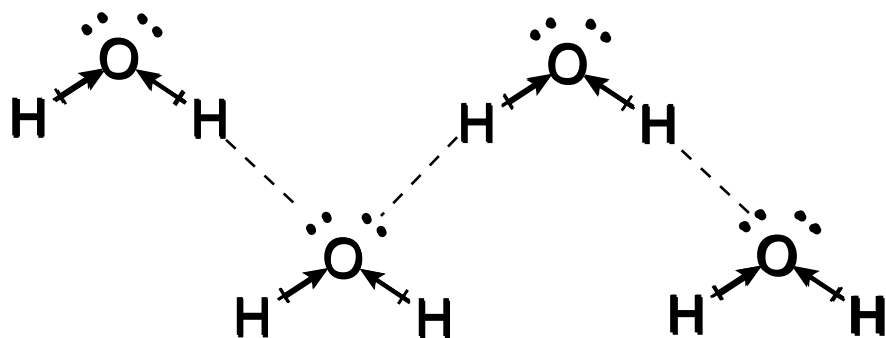
A. dipole-dipole

1. Ionic (very strong)

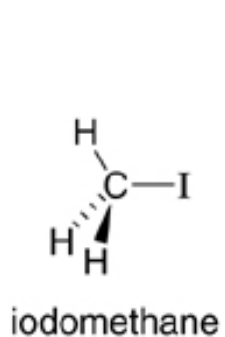
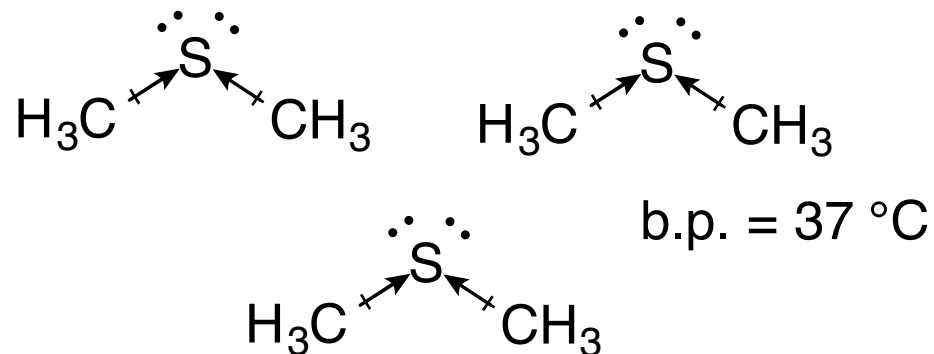


2. Hydrogen bonding (strong)

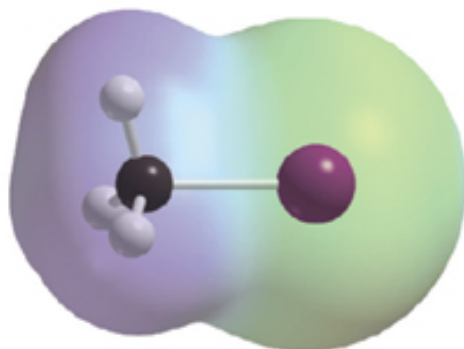
H bridges two atoms (F, O, N, S) using
a covalent bond and
an electrostatic bond



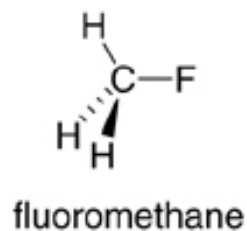
3. dipole-dipole (moderate)



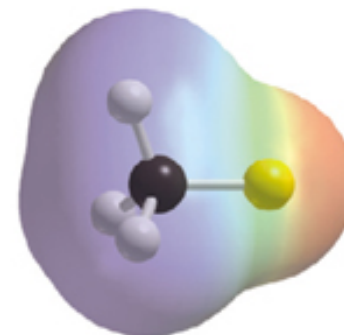
=



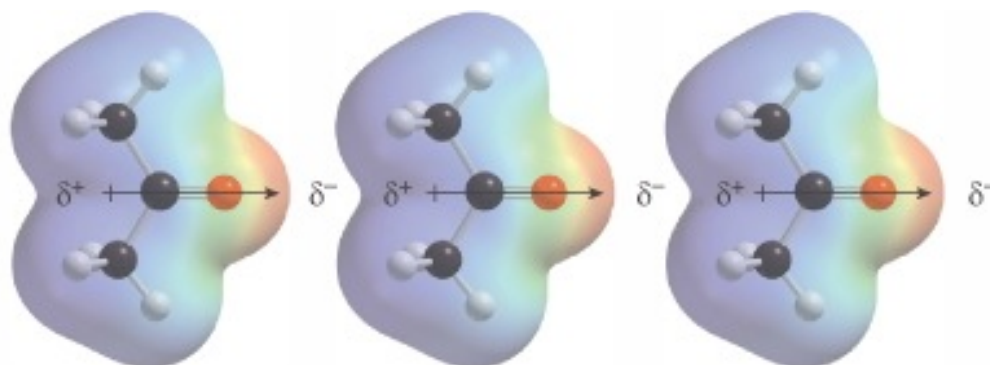
more polarizable I atom
higher boiling point
bp = 42 °C



=



less polarizable F atom
lower boiling point
bp = -78 °C

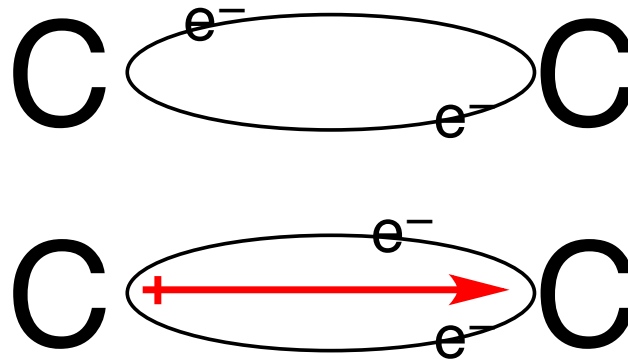


4. van der Waals (weak, but still significant)

Sometimes called London Forces

An induced dipole

Surface area of the molecule is important



van der Waals interaction between two CH₄ molecules

weaker force of attraction

stronger force of attraction

small, less polarizable atoms

large polarizable atoms

Unsymmetrical electron density creates a temporary dipole.

4. van der Waals (weak, but still significant)

Sometimes called London Forces

An induced dipole

Surface area of the molecule is important

Pentane isomers (C_5H_{12})

