

Which liquid has the highest boiling point:

1. HI
2. HF
3. HBr
4. HCl

Correct Answer: 2.

Comments to the instructor: The strongest intermolecular force for HF is the hydrogen-bonding interaction. This is a stronger force than the dipole-dipole interactions between HI, HBr and HCl.

Which solid has the lowest melting point:

1. I₂
2. Cl₂
3. F₂
4. Br₂

Correct Answer: 3.

Comments to the instructor: When the same type of intermolecular force is used as a comparison, the higher the molecular weight (or size of molecule), the stronger the interactions, hence, F₂ will have the lowest melting point.

Which compound has the largest intermolecular forces:

1. CH₄
2. CO₂
3. CCl₄
4. Cl₂

Correct Answer: 3.

Comments to the instructor: All of these compounds are nonpolar. CCl_4 has the highest molecular weight, and size and the most polar bonds, so the interactions will be the strongest for this compound.