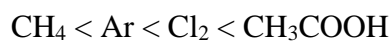


Question 1

1. List the substances Ar, Cl₂, CH₄, and CH₃COOH in order of increasing strength of intermolecular attractions.

Answer:



Explanation:

Ar

atom by itself → dispersion force

molar mass Ar = 39.95 g/mol

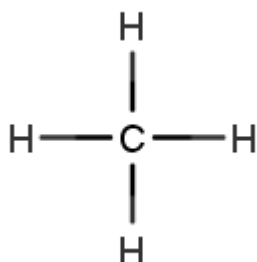
• **Cl₂**



composed of the same atom → no electronegativity difference → dispersion force

molar mass Cl₂ = 70.9 g/mol (heaviest)

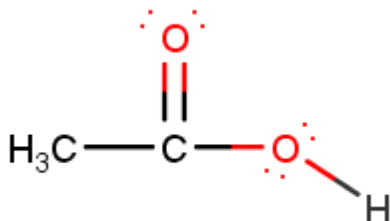
• **CH₄**



C and H have very close electronegativity values (hydrocarbon) → no dipole moment
→ dispersion force

molar mass CH₄ = 16.042 g/mol

• **CH₃COOH**



has H directly bonded to O → hydrogen bonding → Strongest intermolecular force

Question 1

CH₄ → lightest → weakest dispersion forces

Cl₂ → heaviest → strongest dispersion forces

Ranking:

CH₄ < Ar < Cl₂ < CH₃COOH