

Place the following compounds in order of **increasing** strength of intermolecular forces.



- A) CH<sub>3</sub>CH<sub>2</sub>CH<sub>3</sub> < CH<sub>4</sub> < CH<sub>3</sub>CH<sub>3</sub>
- B) CH<sub>3</sub>CH<sub>2</sub>CH<sub>3</sub> < CH<sub>3</sub>CH<sub>3</sub> < CH<sub>4</sub>
- C) CH<sub>3</sub>CH<sub>3</sub> < CH<sub>4</sub> < CH<sub>3</sub>CH<sub>2</sub>CH<sub>3</sub>
- D) CH<sub>4</sub> < CH<sub>3</sub>CH<sub>2</sub>CH<sub>3</sub> < CH<sub>3</sub>CH<sub>3</sub>
- E) CH<sub>4</sub> < CH<sub>3</sub>CH<sub>3</sub> < CH<sub>3</sub>CH<sub>2</sub>CH<sub>3</sub>

24) Which substance below has the strongest intermolecular forces?

- A) A<sub>2</sub>X, ΔH<sub>vap</sub> = 39.6 kJ/mol
- B) BY<sub>2</sub>, ΔH<sub>vap</sub> = 26.7 kJ/mol
- C) C<sub>3</sub>X<sub>2</sub>, ΔH<sub>vap</sub> = 36.4 kJ/mol
- D) DX<sub>2</sub>, ΔH<sub>vap</sub> = 23.3 kJ/mol
- E) EY<sub>3</sub>, ΔH<sub>vap</sub> = 21.5 kJ/mol

Place the following substances in order of **increasing** boiling point.



- A) Ar < CH<sub>3</sub>OCH<sub>3</sub> < CH<sub>3</sub>CH<sub>2</sub>OH
- B) CH<sub>3</sub>CH<sub>2</sub>OH < Ar < CH<sub>3</sub>OCH<sub>3</sub>
- C) CH<sub>3</sub>CH<sub>2</sub>OH < CH<sub>3</sub>OCH<sub>3</sub> < Ar
- D) CH<sub>3</sub>OCH<sub>3</sub> < Ar < CH<sub>3</sub>CH<sub>2</sub>OH
- E) Ar < CH<sub>3</sub>CH<sub>2</sub>OH < CH<sub>3</sub>OCH<sub>3</sub>

How much energy is required to vaporize 48.7 g of dichloromethane (CH<sub>2</sub>Cl<sub>2</sub>) at its boiling point, if its ΔH<sub>vap</sub> is 31.6 kJ/mol?

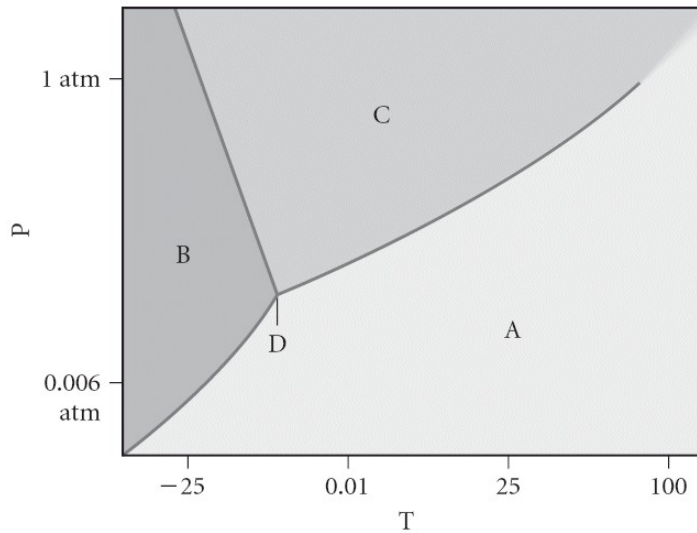
- A) 31.2 kJ
- B) 6.49 kJ
- C) 55.1 kJ
- D) 15.4 kJ
- E) 18.1 kJ

Place the following substances in order of **increasing** vapor pressure at a given temperature.



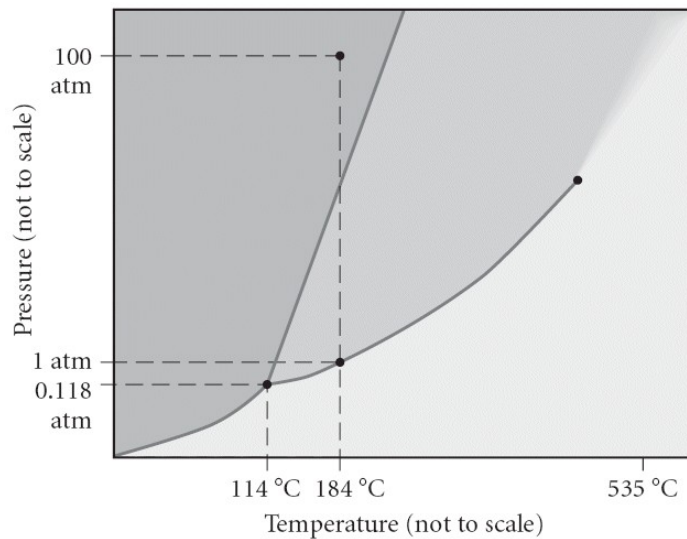
- A) SF<sub>6</sub> < SiH<sub>4</sub> < SF<sub>4</sub>
- B) SiH<sub>4</sub> < SF<sub>4</sub> < SF<sub>6</sub>
- C) SF<sub>6</sub> < SF<sub>4</sub> < SiH<sub>4</sub>
- D) SF<sub>4</sub> < SF<sub>6</sub> < SiH<sub>4</sub>
- E) SiH<sub>4</sub> < SF<sub>6</sub> < SF<sub>4</sub>

Assign the appropriate labels to the phase diagram shown below.



- A) A = liquid, B = solid, C = gas, D = critical point
- B) A = gas, B = solid, C = liquid, D = triple point
- C) A = gas, B = liquid, C = solid, D = critical point
- D) A = solid, B = gas, C = liquid, D = supercritical fluid
- E) A = liquid, B = gas, C = solid, D = triple point

Consider the phase diagram below. If the dashed line at 1 atm of pressure is followed from 100 to 500 °C, what phase changes will occur (in order of increasing temperature)?



- A) condensation, followed by vaporization
- B) sublimation, followed by deposition
- C) vaporization, followed by deposition
- D) fusion, followed by vaporization
- E) No phase change will occur under the conditions specified.