

UNIT 5 – THERMOCHEMISTRY

IPOD Questions

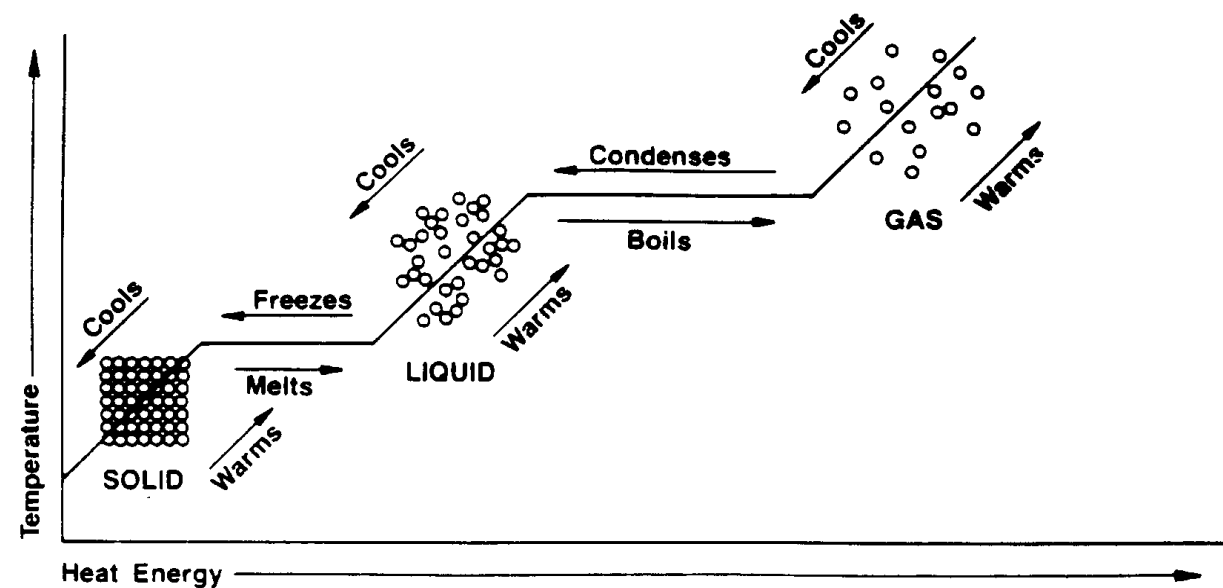


IT'S *THE* PROBLEM OF *THE* DAY

IPOD # 32

1. The pressure at the top of Mount Everest is 33.7 kPa. What is this pressure in atm?
2. In terms of kinetic energy, explain how a molecule in a liquid enters the gas state?

3. What do the diagonal lines on a phase change diagram represent? How about the horizontal sections?



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IPOD # 33

1. How much heat is required to raise the temperature of 400.0 g of silver. The specific heat capacity of silver is $0.24 \text{ J/g}^\circ\text{C}$.
2. A 1.55-g piece of stainless steel absorbs 141 J of heat when its temperature is increased from 10°C to 188°C . What is the specific heat of the stainless steel ?



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IPOD # 34

1. You place a bottle containing 2.0 L of water ($D = 1.0 \text{ g/mL}$) at 25°C into a refrigerator to cool to 7°C .
 - a) How many kJ of heat are lost by the water?
 - b) How many kJ of heat are absorbed by the refrigerator?
 - c) What assumptions did you make in your calculations?



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IPOD # 35

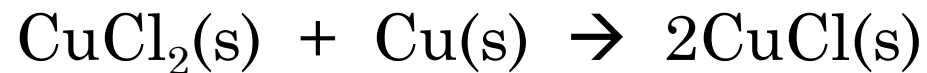
1. How much heat is required to **melt** a 10.0-g popsicle at 0°C ? *Assume the popsicle has the same molar mass & heat of fusion as water.*
2. When 435 J of heat is added to 3.40 g of olive oil at 21.0°C , the **temperature increases** to 85.0°C . What is the specific heat capacity of the olive oil?
3. Calculate the heat required to change 200.0 g of **liquid water** from 25.0°C to **steam** at 125.0°C ?



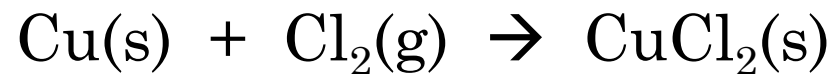
IT'S *THE* PROBLEM OF *THE* DAY

IPOD # 36

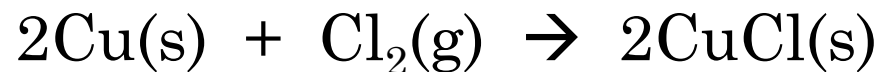
1. Calculate the enthalpy change, ΔH (in kJ/mol) for the reaction:



Use the following data:



$$\Delta H = -206 \text{ kJ}$$



$$\Delta H = -136 \text{ kJ}$$



IT'S *THE* PROBLEM OF *THE* DAY

IPOD # 37

1. Solid iron and carbon dioxide gas are produced by combining solid iron (III) oxide and carbon monoxide gas. 26.3 kJ is released in the reaction.
 - a) Write a balanced thermochemical equation.
 - b) Draw an energy diagram that includes the reactants, products and ΔH .
 - c) How much heat is produced when 3.40 moles of iron (III) oxide reacts?
 - d) If 50 kJ of heat is produced, how many liters of carbon dioxide gas formed?

