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| **School of Pedagogical Sciences (SPS)**  **M.G University Kottayam as a part of Ph. D Programme**  Research Scholar  **: Shanavas K.E**  Supervising Teacher **: Dr Sajna Jaleel Professor SPS** | | | |
| **Action Script : E Content Lesson based on CDM T 9**  Name of Teacher**:** Shanavas K.E Standard: XI Science  Subject: Chemistry Strength: 59  Topic: Enthalpy changes during phase transformations, Hess’s law of constant heat summation. Time: 6 minutes Chapter: Thermodynamics | | | |
| Audio | Video | Tg-lg activities | Phases of CDM |
| Hello Plus One Students, Welcome to the world of plus one chemistry. chapter 6 T.D This is E content Lesson -9  Today I focus up on  Enthalpy changes during phase  Transformation and Hess’s law of constant heat summation.  Can you give the name of following phase transformation   1. Solid 🡪 Liquid 2. Liquid 🡪 Gas 3. Solid 🡪 Gas   Solution  a) Melting or Fusion  b) Evaporation  c) sublimation  When one mole of ice changes into water at its melting point 273K, 6 KJmol-1 of heat is absorbed.  H2O (s) 🡪 H2O (l) ∆Hfus = +6 KJ mol -1  Can you define standard enthalpy of Fusion?  It is the enthalpy change accompanying the melting of 1mole of a solid substance into the liquid state at its melting point.  Can you define standard  enthalpy of vaporization ∆H0vap?  H2O (l) 🡪 H2O (g) ∆Hvap = +40.6 KJ mol -1  It is the enthalpy change accompanying the vaporization of one mole of a liquid substance into its gaseous state at its boiling point is called standard enthalpy of vaporization  Can you define standard enthalpy of sublimation ∆H0 sub?  It is the enthalpy change when one mole of a solid substance changes into its gaseous at its boiling point is called standard enthalpy of sublimation  CO2 (s) 🡪 CO2 (g) ∆HSub = +25.2 KJ mol -1  Can you define standard enthalpy of formation ∆H0f  Itis defined as the one mole of a compound from its elements in their standard states.  CGraphite + 2H2(g) 🡪 CH4 (g) ∆H0f = -74.81 KJmol-1  Can you define enthalpy of combustion ∆Hc  It is the enthalpy change accompanying the complete combustion of 1 mole of substance in excess oxygen in standard state.  What is the enthalpy change in the formation of CO2 in two different methods?  Step I  C(s) + O2(g) 🡪 CO2 (g) ∆H= -393.5 KJ mol -1  Step II  C(s) + ½ O2(g) 🡪 CO (g) ∆H= -110.3 KJ mol -1  CO (g) +½ O2(g) 🡪 CO2 (g) ∆H= -283.2 KJ mol -1  Is Enthalpy change same or different?  ∆Hf enthalpy change is same  in one step or several steps. This is Hess’s law.  State and explain Hess’s law of heat summation?  It states that the enthalpy change of a chemical reaction is same in one step or several steps.  ∆Hf for CO2 in both method is same and is -393.5KJ mol.    **Time gap online assignment**  Problem  Calculate the enthalpy change when rhombic Sulphur is converted to monoclinic Sulphur?  Srhombic + O2(g) 🡪 SO2 (g) ∆H= -295.1KJ mol -1 🡪 1  Mmonoclinic + O2(g) 🡪 SO2 (g) ∆H= -296.4KJ mol -1 🡪 2  Solution:  Reversing equation 2, we get  SO2 (g) 🡪 Mmonoclinic + O2(g)  ∆H= +296.4KJ mol -1 🡪 3  Adding equations 1 and 3  Srhombic 🡪 Smonoclinic  Enthalpy change +1.3KJmol-1 | Teacher presents  Slide  Question   1. Solid 🡪 Liquid 2. Liquid 🡪 Gas 3. Solid 🡪 Gas   Slide  a) Melting or Fusion  b) Evaporation  c) sublimation  Slide  Definition of standard Enthalpy of Fusion    Slide  Definition of standard Enthalpy of Vaporization  Slide  Definition of standard Enthalpy of Sublimation  Slide  Definition of standard Enthalpy of Formation.  Slide  Definition of standard Enthalpy of Combustion.  Slide  Statement or definition of Hess’s law of heat summation  Slide  Problem  Slide  Solution of the problem  Thank you. Learn well. Revise the E-content Lesson. Enjoy chemistry. Learn in a simple way. | . | **Phase 1**  Establishes rapport with the students.  Confrontation with stage relevant task  Present a puzzling problem  Insisting to think  **Phase 2**  Inquiry  Seeks  reasoning  **Phase 3**  **Transfer**  Probes reasoning  Elicit student’s responses  Insisting to think  Seeks justification.  Giving perceptual cues or hints.  Seeks justification.  Accommodation of new learning experience leading to ability to apply in different learning situations. |