AP Chemistry Daily Videos: 6.5 Energy of Phase Changes

1. Discuss the attractions and energy associated with the various phase changes that can take place with water.

2. What is taking place at the plateaus during the graphical representation of the phase changes? Discuss temperature and states of matter in your answer.

3. Discuss the difference of the line segments, angled vs. flat. Include the different equation for the different line segments.

4. Why is the line segment for vaporization longer than the line segment for melting?

1. Follow along with Dr. Leggett to complete the following problem!

Answer the following questions about gallium, a metal often used to make computer chips.

Molar heat capacity of solid	$25.86\ J\ mol^{-1}K^{-1}$
Heat of fusion	$5.59\ kJ\ mol^{-1}$
Heat of vaporization	$256\ kJ\ mol^{-1}$
Melting point	$303\ K$

Gallium can be purified by melting. How much energy in kJ is required to melt 2 moles of gallium originally at 293 K?

Use principles of bonding to explain why the heat of vaporization is much greater than the heat of fusion.

2. Pause the video at 4:35 to read and to read and attempt the problem, then evaluate how you did and identify any errors.

Stop the video and answer the following questions regarding polyethylene terephathalate (PET), the plastic typically used in water bottles.

(a) One step in the production of PET involves the crystallization of melted PET. While the plastic is solidifying, is the net flow of thermal energy from the plastic to the surroundings or from the surroundings to the plastic? Justify your answer.

(b) Determine the amount of heat, in kJ, involved when solidifying 12.0 moles of PET at its melting point. $\Delta H^{\circ}_{fusion} = 26.0\ kJ\ mol^{-1}$. Include the correct sign in your answer.