Answer on the question #42682, Chemistry, Physical Chemistry

Question:

What quantity of energy is required to vaporize 25 moles of water that is at 100 degrees celcius

Solution:

The enthalpy of vaporization, (symbol ΔH_{vap}) also known as the (latent) heat of vaporization or heat of evaporation, is the enthalpy change required to transform a given quantity of a substance from a liquid into a gas at a given pressure. The heat of vaporization of water is 40.68 kJ mol^{-1}. The energy is required to vaporize the 25 moles of water is:

$$E = n\Delta H_{vap} = 25 * 40.68 = 1017\ kJ$$

Answer: 1017 kJ is required to vaporize 25 moles of water that is at 100 ˚C.