Answer on Question #55950 - Chemistry - General chemistry

Question:

You add 100.0g of water at 55.0C to 100.0g of ice at 0.00C. Some of the ice melts and cools the water to 0.00C. When thermal equilibrium is established at 0.00C, what mass of ice has melted?

Delta H of fusion for water is 333 J/g.

What is the wavelength of light in nm with an energy of 486 kJ/mol? Is it in the visible region?

Answer:

Cooling of water heat release:

Q = cmΔT = 4.20 J/(g K)*100.0 g*(55.0°C – 0.00°C) = 23100 J

Ice melting heat absorption:

Q = cm; m = Q/c = 23100 J/333 J/g **= 69.4 g**

$$\frac{E}{N_A} = \frac{hc}{\lambda};\ \lambda = \frac{hcN_A}{E} = \frac{1.98644568 \times 10^{-25} J\,m \times 6.022 \times 10^{23} mol^{-1}}{486\ kJ/mol} = \mathbf{246\ nm}$$

No, it's not.