Answer on Question#71867 – Chemistry – General chemistry

Question: Calculate the heat when 25 g of NH4NO3 will dissolve in 150 mL of water, temperature decreases from 28 degrees Celsius to 20.3 degrees Celsius.

Solution:

$\Delta H = -cm\Delta T$,

Where c is the specific heat of water and $c = 4.186\ \frac{J}{g°\text{C}}$;

m is mass of water: $m = \ \rho \times V = 1.00 \frac{g}{mL} \times 150\ mL = 150\ g$

$\Delta T = 20.3°\text{C} - 28.0°\text{C} = -7.7°\text{C}$

$$\Delta H = -4.186 \frac{J}{g°\text{C}} \times 150g \times (-7.7°\text{C}) = 4.8 \times 10^3 J = 4.8kJ$$

Answer: 4.8 kJ