Answer on Question #77955 – Chemistry – General Chemistry

Question:

A 75.0 g object needs 995 Joules to increase its temperature by 8.0°C. Its specific heat capacity is

A. 0.229 J/g°C

B. 22.9 J/g°C

C. 0.229 × 10² J/g°C

D. 2.29 × 10² J/g°C

E. None of the Above

Solution:

Change of energy ΔE (995 Joules in this case) is related to change in temperature ΔT (8°C in this case), mass m (75 g) and specific heat capacity c through the following formula:

$$\Delta E = cm\Delta T$$

From this, specific heat capacity is

$$c = \frac{\Delta E}{m\Delta T}$$

Substituting values yields to

$$c = \frac{995J}{75g \times 8°C} \approx 1.658\frac{J}{g°C}$$

Answer:

E. None of the above.