

### Answer on Question #67994-Physics-Molecular Physics | Thermodynamics

a 200g calorimeter can contains 150 g of oil at 20 degree c. to the oil is added 80 g of aluminum at 300 degree c. what will the temperature of the system after equilibrium is established? (specific heat of copper = 0.093 cal/cG degree, aluminum = 0.21 cal/gC degree, oil = 0.37 cal/gC degree)

#### Solution

$$m_{\text{oil}}c_{\text{oil}}(T - T_{\text{oil}}) + m_{\text{copper}}c_{\text{copper}}(T - T_{\text{oil}}) = m_{\text{aluminum}}c_{\text{aluminum}}(T_{\text{aluminum}} - T)$$

$$(150)(0.37)(T - 20) + (200)(0.093)(T - 20) = (80)(0.21)(300 - T)$$

$$T = 72 \text{ }^{\circ}\text{C}.$$

**Answer: 72 °C.**