Answer on Question #75718 – Chemistry – General Chemistry

What is the final temperature if the metal beads, weighing 200.0 g, heated to 100 degree celsius is placed in a calorimeter that contains 80.g of H_2O at 20.0 degree celsius? The specific heat if the metal is 0.385 J/g degree celsius.

Solution:

$q_{lost\ by\ metal} = q_{gained\ by\ water} + q_{gained\ by\ calorimeter}$

$(200.0\ g)\ (100\ °C - x)\ (0.385\ J\ g^{-1}\ °C^{-1}) = (80.0\ g)\ (x - 20.0\ °C)\ (4.184\ J\ g^{-1}\ °C^{-1})$

$7700 - 77x = 334.72x - 6694.4$

$411.72x = 14394.4$

$x = 35\ °C$

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