Chemistry 2201 Exp: ENTHALPY

Determining the molar enthalpy of solution($\Delta H_{soln,m}$) of methanol and water.

$\Delta H_{soln,m}$ = 0 for an ideal mixture.
Intermolecular attraction forces between the two components same as individual components.

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Exothermic solution formation ($\Delta H_{soln} < 0$) implies intermolecular attractive forces are stronger in the solution than in pure liquids. Endothermic solution formation ($\Delta H_{soln} > 0$) implies that they are weaker.

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Assigned two mole-fraction from your instructor. Calculate volume of methanol and water needed to prepare 200.0 mL of solution.

Carefully pour required amounts into an erlenmyer flask and weigh.

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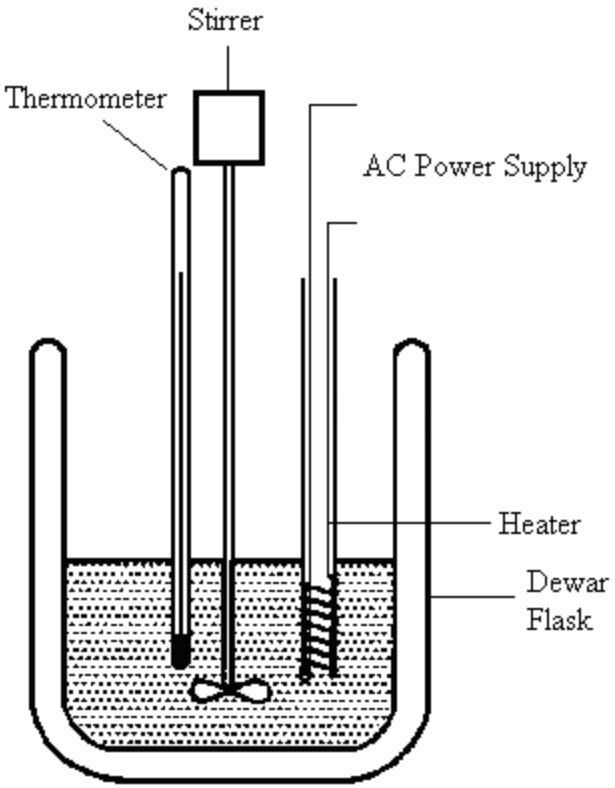
Calorimeter(constant pressure) used:



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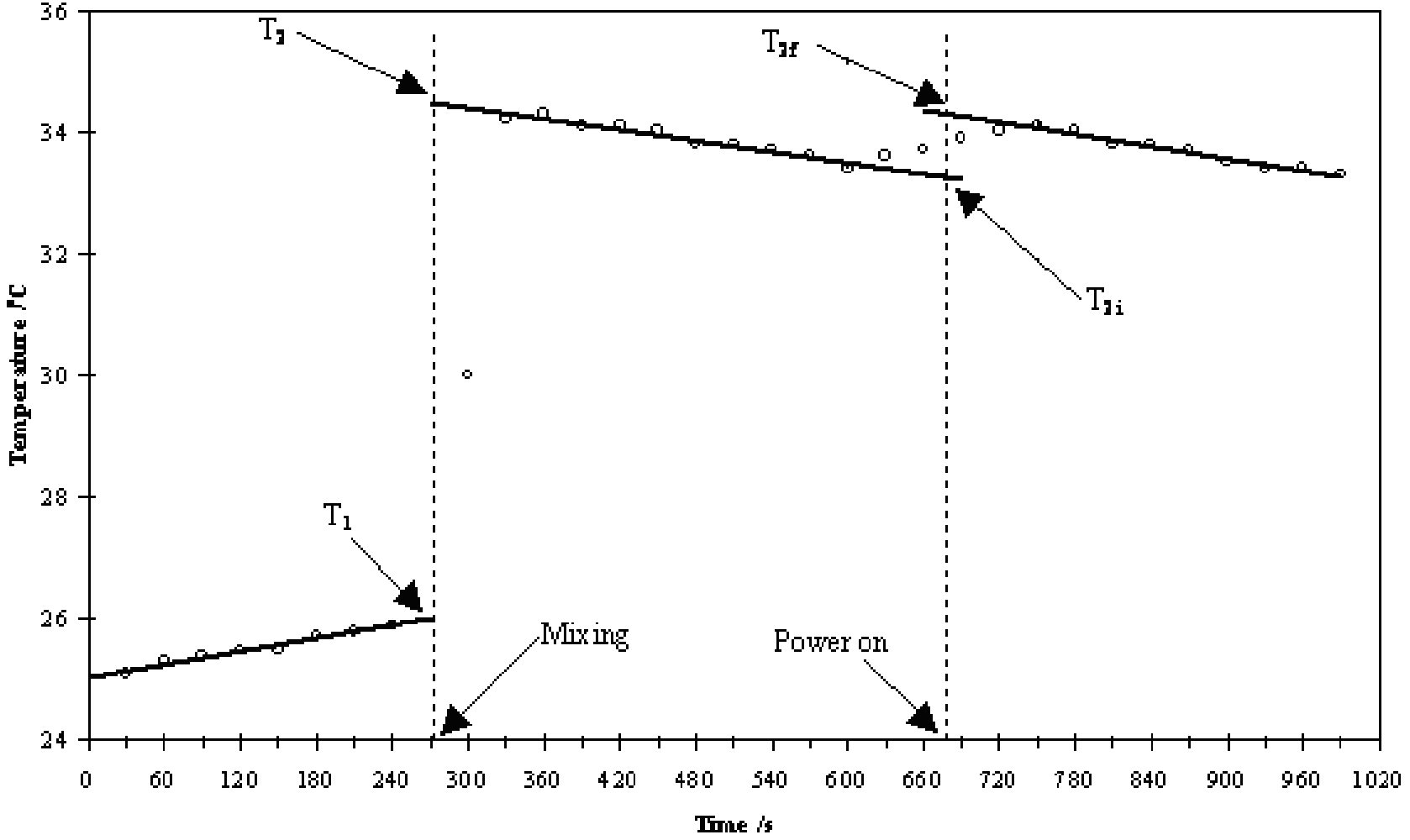
Record temperature as a function of time as instructed by instructor.



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Determination of heat capacity(C_p)of calorimeter.

$$C_P = \frac{P \cdot t}{\Delta T}$$

Where

$\Delta T = T_{2f} - T_{2i}$

t = time(sec) power is on.

P = 350. W = 350. J/sec

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Determination of ΔH_{soln} and $\Delta H_{soln,m}$.

$$\Delta H_{soln} = C_p(T_1 - T_2)$$