

Enthalpy Changes and Calorimetry

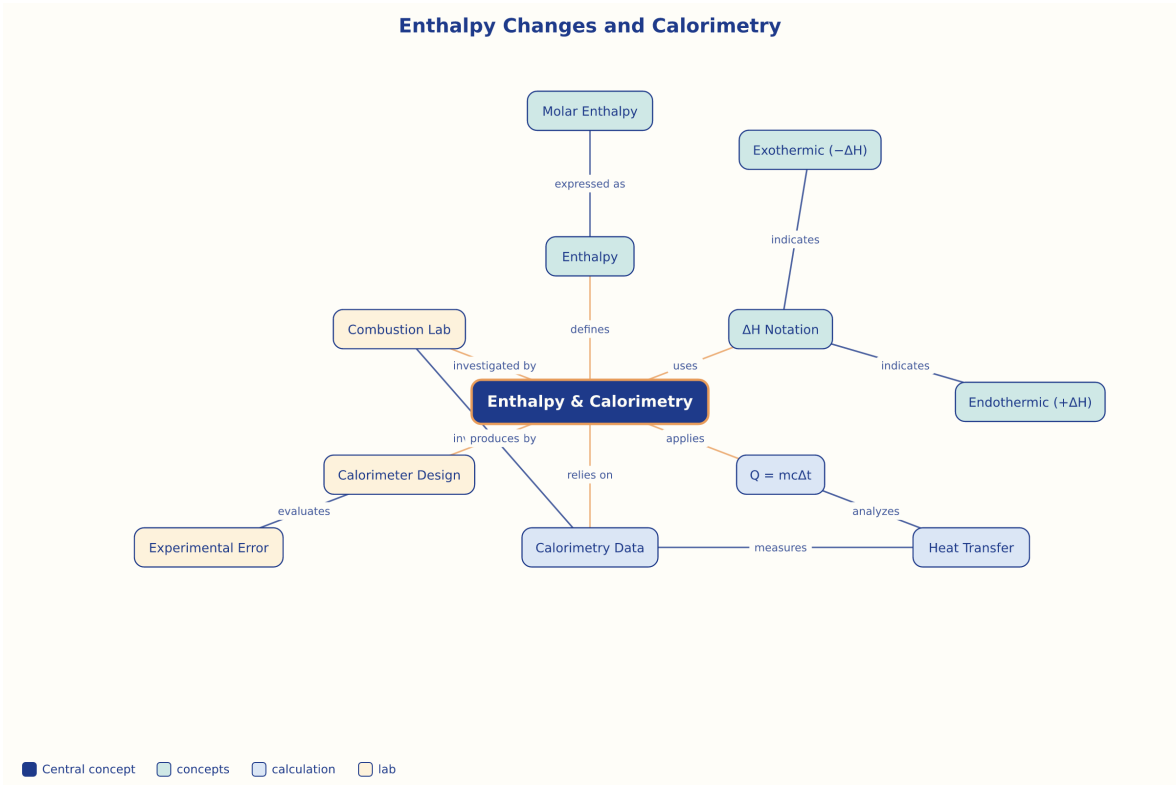
Central concept: **Enthalpy & Calorimetry**

Connections

- Enthalpy & Calorimetry (defines) -> Enthalpy
- Enthalpy (expressed as) -> Molar Enthalpy
- Enthalpy & Calorimetry (uses) -> ΔH , ΔH°_f , ΔH°_{rxn}
- ΔH , ΔH°_f , ΔH°_{rxn} $\rightarrow$ $\Delta H^\circ_{rxn} = \sum \Delta H^\circ_f(\text{products}) - \sum \Delta H^\circ_f(\text{reactants})$
- ΔH , ΔH°_f , ΔH°_{rxn} $\rightarrow$ $\Delta H^\circ_{rxn} = \sum \Delta H^\circ_f(\text{products}) - \sum \Delta H^\circ_f(\text{reactants})$
- Enthalpy & Calorimetry (applies) -> $Q = mc\Delta T$
- $Q = mc\Delta T$ $\rightarrow$ Heat Transfer
- Enthalpy & Calorimetry (relies on) -> Calorimetry Data
- Calorimetry Data (measures) -> Heat Transfer
- Enthalpy & Calorimetry (investigated by) -> Calorimeter Design
- Enthalpy & Calorimetry (investigated by) -> Combustion Lab
- Calorimeter Design (evaluates) -> Experimental Error
- Combustion Lab (produces) -> Calorimetry Data

Notes

- **Enthalpy & Calorimetry:** Determining and interpreting energy changes in chemical reactions ([Topic](#)). [Topic](#)
- **Enthalpy:** Defined as heat content of a system; molar enthalpy expresses this per mole of substance reacting ([Outcome](#), [Outcome](#)). [Outcome](#), [Outcome](#)
- **Molar Enthalpy:** Enthalpy change expressed per mole of a reactant or product ([Outcome](#), [Outcome](#)). [Outcome](#), [Outcome](#)
- ΔH , ΔH°_f , ΔH°_{rxn} used to communicate and calculate energy changes in reactions ([Outcome](#)). [Outcome](#)
- **Exothermic** ($\Delta H < 0$): Reaction releases energy, shown by negative ΔH , ΔH°_f , ΔH°_{rxn} . [Outcome](#)
- **Endothermic** ($\Delta H > 0$): Reaction absorbs energy, shown by positive ΔH , ΔH°_f , ΔH°_{rxn} . [Outcome](#)
- **$Q = mc\Delta T$** : Equation applied to analyze heat transfer between substances ([Outcome](#), [Outcome](#)). [Outcome](#), [Outcome](#)
- **Heat Transfer:** Movement of thermal energy analyzed using $Q = mc\Delta T$. [Outcome](#), [Outcome](#)
- **Calorimetry Data:** Temperature and mass data used to determine enthalpy changes in reactions ([Outcome](#)). [Outcome](#)
- **Calorimeter Design:** Building and testing a polystyrene-cup calorimeter to evaluate precision ([Resource](#)). [Resource](#)
- **Combustion Lab:** Measures heat released when burning a substance to transfer energy to water ([Resource](#)). [Resource](#)
- **Experimental Error:** Evaluated through repeated trials and data collection in calorimeter testing ([Resource](#)). [Resource](#)



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