



## What is Molecular Thermochemistry?

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### ABOUT THE STUDY

Molecular Thermochemistry (MC) is the study of the heat energy which is associated with chemical reactions and phase changes including melting and boiling. A reaction may release energy, and a phase change may do the same. It focuses on the energy exchange between a system and its surroundings in the form of heat. MC is useful in predicting reactant and product quantities throughout the course of a given reaction. In combination with entropy determinations, it is also used to predict whether a reaction is spontaneous favorable. It is the study of chemical reactions and the energy changes that involve heat. Molecular Thermochemistry (MC) is the study of the energy and heat to do with chemical reactions and physical transformations. Physical transformations are when a state of matter a liquid, for example changes to another state. Thermodynamics is the study of heat transfer. It is specifically the study of heat transfer in chemical reactions. Basic molecular thermochemical ideas consist of the notion of a system and its environment and of closed, open, and isolated systems; the concepts of kinetic energy, potential energy, and internal energy; and the difference between various types of energy exchanges, heat ( $q$ ) and work ( $w$ ).

Molecular Thermochemistry (MT) is a department of thermodynamics which is the study of heat absorbed in a chemical reaction. It is the part of thermodynamics that studies the relationship between heat and chemical reactions. The word thermodynamics is the derived from the Greek words that mean

heat and power. It is a part of thermodynamics that studies the relationship between heat and chemical reactions. It is a very important field of study because it helps to determine if a particular reaction will occur and if it will absorb energy as it occurs. It is the study of energy changes that occur during chemical reactions and changes in state. Work and energy used to cause an object with mass to move against a force. Molecular Thermochemistry (MC) is useful in predicting reactant and product quantities throughout the course of a given reaction. In combination with entropy determinations, it is also used to predict whether a reaction is spontaneous and favorable. Molecular thermochemistry is a part of the broader field of chemical thermodynamics, which deals with the exchange of all kinds of energy between system and surroundings, which includes not only heat however also various kinds of work, as well the exchange of matter. When all kinds of energy are considered, the concepts of exothermic and endothermic reactions are generalized to exergonic and endergonic reactions.

It is also involves the measurement of the latent heat of phase transitions. Joseph Black had introduced the concept of latent heat in 1761, based on the observation that heating ice at its melting point did not raise the temperature but instead caused some ice to melt. Molecular thermochemical processing is the use of heat to promote chemical transformations of biomass into energy and chemical products. The techniques discussed in this lab are combustion, slow, fast and flash pyrolysis, Torre faction and gasification.

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