

ORGANIC REACTION MECHANISMS – PRINCIPLES, INTERPRETATION, AND GENERALIZATION

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Chemistry, particularly organic chemistry, is the science dedicated to studying the properties and transformations of matter. Following the advancements in the determination of structures and synthesis of organic compounds, there was a significant surge in research at the end of the 19th century and throughout much of the 20th century. This research increasingly focused on understanding chemical reactions.

Key questions arise from this interest: How is the structure of the starting compounds linked to their potential transformation into specific products? To what extent can the theories of chemical kinetics, which originated in physical chemistry, be applied to predict the rates of organic reactions and the molecular structures of the resulting products? Furthermore, what defines chemical reactivity, and what contributes to the stability of organic molecules? How can quantum theory elucidate the nature of chemical reactions based on electron structure?

These inquiries and others have propelled the development of a subdiscipline that has evolved from the mid-20th century to the present day: the theory of organic reaction mechanisms.