

composite mechanism

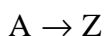
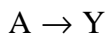
A reaction that involves more than one elementary reaction is said to occur by a composite mechanism. The terms *complex mechanism*, *indirect mechanism*, and *step-wise mechanism* are also commonly used.

There are two main kinds of evidence for a composite mechanism:

1. The kinetic equation for the reaction does not correspond to its stoichiometry.
2. There is experimental evidence, direct or indirect, for intermediates of such a nature that it is necessary to conclude that more than one elementary reaction is involved.

There are many types of composite mechanisms, for example:

a. Reactions occurring in parallel, such as:



are called *parallel reactions* or *simultaneous reactions*. When there are simultaneous reactions there is sometimes competition, as in the scheme:

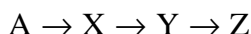


where B and C compete with one another for A.

b. Reactions occurring in forward and reverse directions are called opposing reactions:

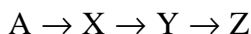


c. Reactions occurring in sequence, such as



are known as consecutive reactions.

d. Reactions are said to exhibit feedback if a substance formed in one step affects the rate of a previous step. For example, in the scheme:



The intermediate Y may catalyse the reaction $A \rightarrow X$ (positive feedback) or it may inhibit it (negative feedback).

e. *Chain reactions*.

1996, 68, 161