

Chain Reaction Mechanisms

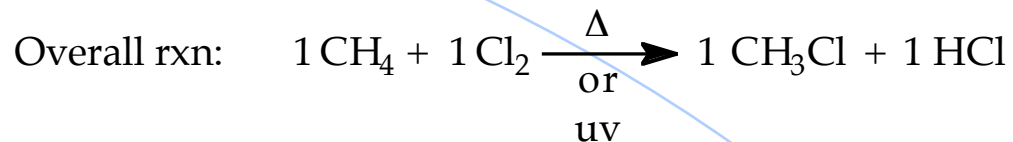
A chemical pathway characterized by the following distinctive steps:

- a) Initiation
- b) Propagation
- c) Inhibition
- d) Termination

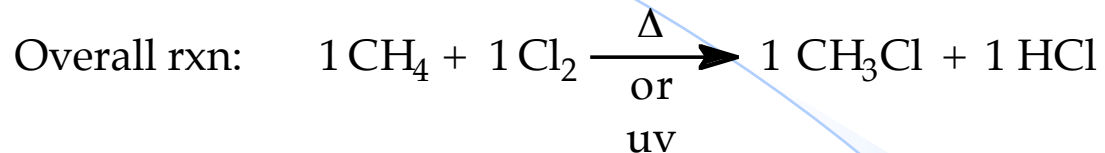
Chain Reaction Mechanisms - cont' d.

- ✦ **Initiation:** A step in which a stable molecular species (not necessarily a reactant in the overall reaction) reacts to generate one or more reactive intermediates
- ✦ **Propagation:** A reactive intermediate attacks a reactant in the overall reaction to generate a new reactive intermediate
- ✦ **Inhibition:** A reactive intermediate attacks a product in the overall reaction to generate a new reactive intermediate
- ✦ **Termination:** Reactive intermediates combine with one another to form a stable molecular species

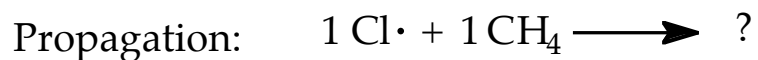
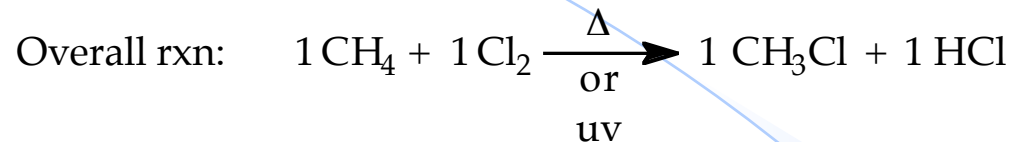
Example of a Chain Reaction Mechanism



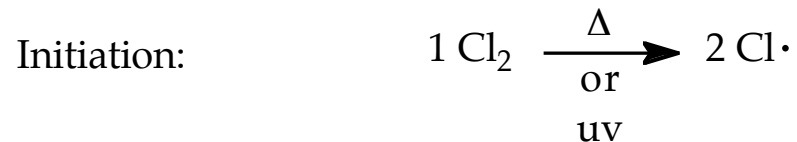
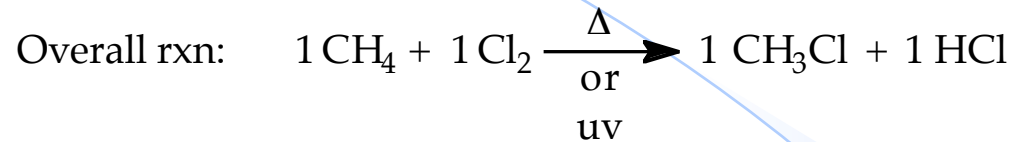
Example of a Chain Reaction Mechanism - cont' d.



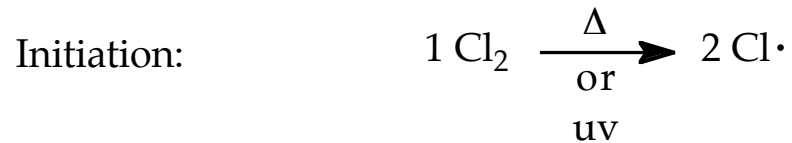
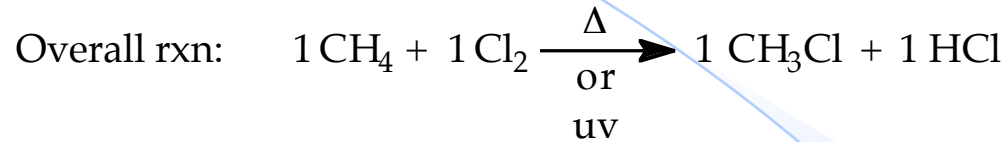
Example of a Chain Reaction Mechanism - cont' d.



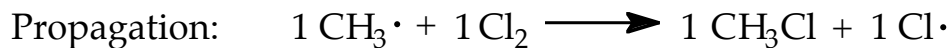
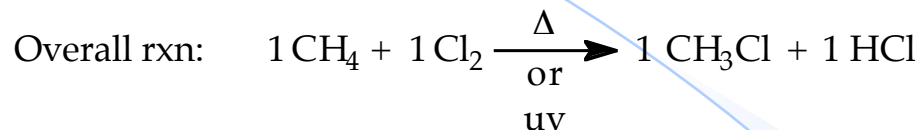
Example of a Chain Reaction Mechanism - cont' d.



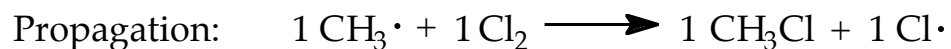
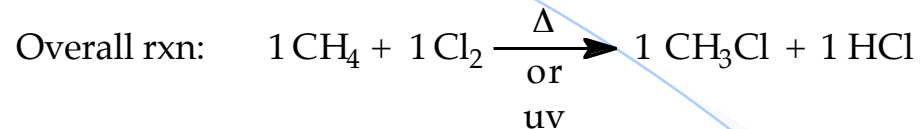
Example of a Chain Reaction Mechanism - cont' d.



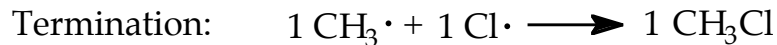
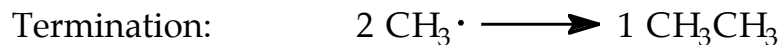
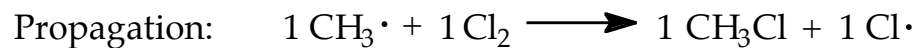
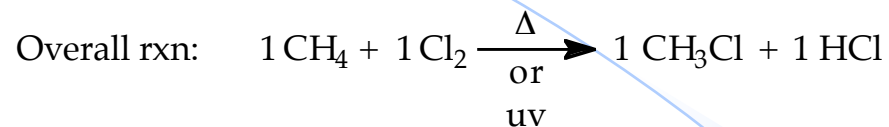
Example of a Chain Reaction Mechanism - cont' d.



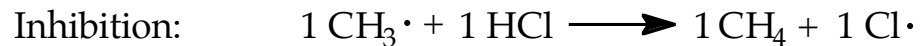
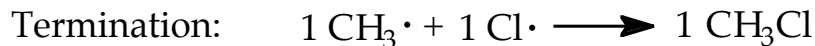
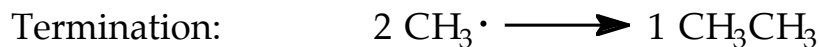
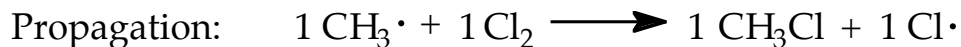
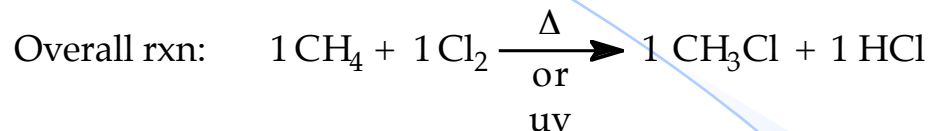
Example of a Chain Reaction Mechanism - cont' d.



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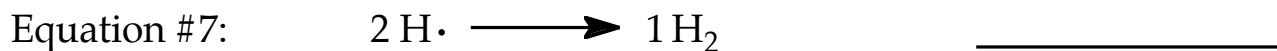
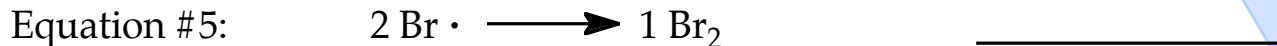
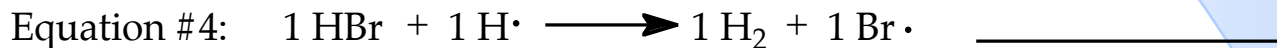
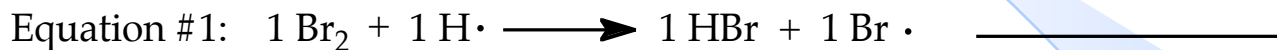
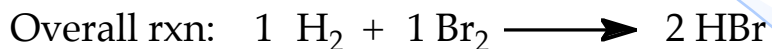


Example of a Chain Reaction Mechanism - cont' d.



A Chain Reaction - Problem #1

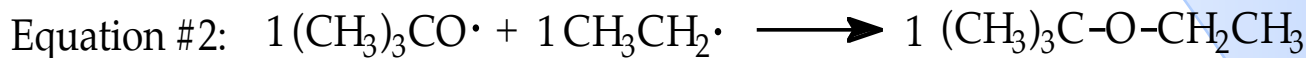
Consider the **jumbled** sequence of steps shown below for the formation of hydrogen bromide from its elements:



Designate each of the above steps as **initiating**, **propagating**, **inhibiting**, or **terminating**.

A Chain Reaction - Problem #2

Consider the jumbled sequence of steps shown below for the formation of ethyl chloride and tert-butyl alcohol from ethane and tert-butyl hypochlorite:



Designate each of the above steps as initiating , propagating, inhibiting , or terminating .