

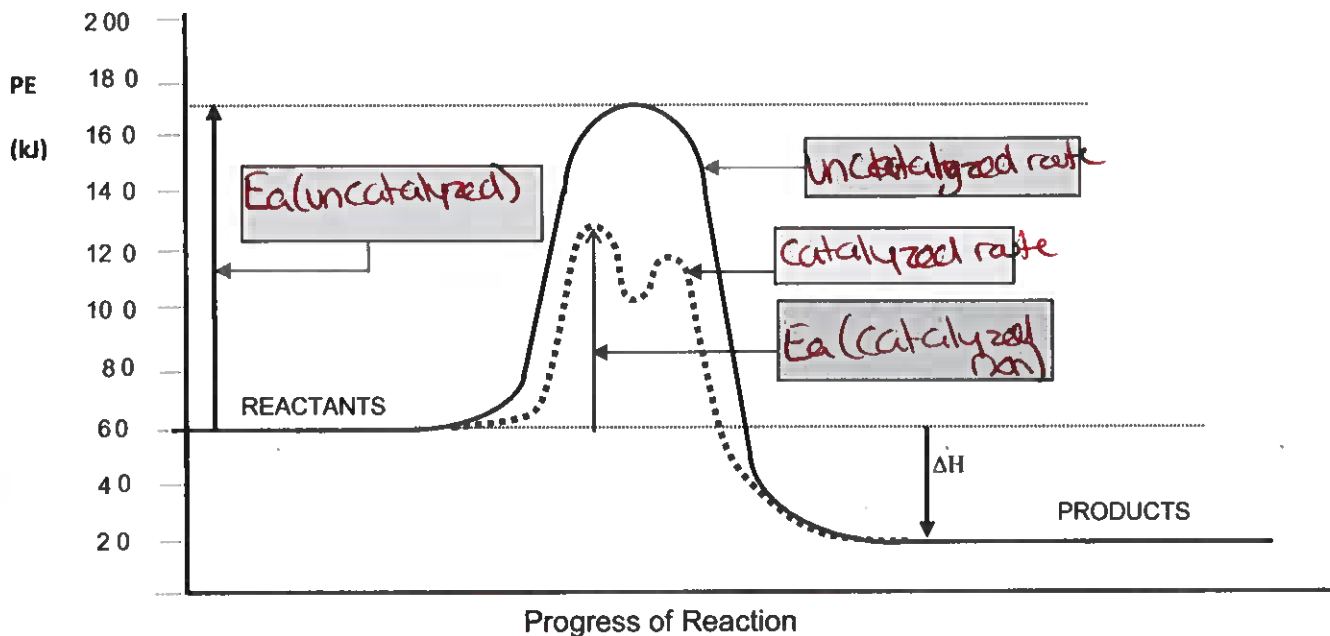
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Chemistry 12: Lesson 9 - Catalysts

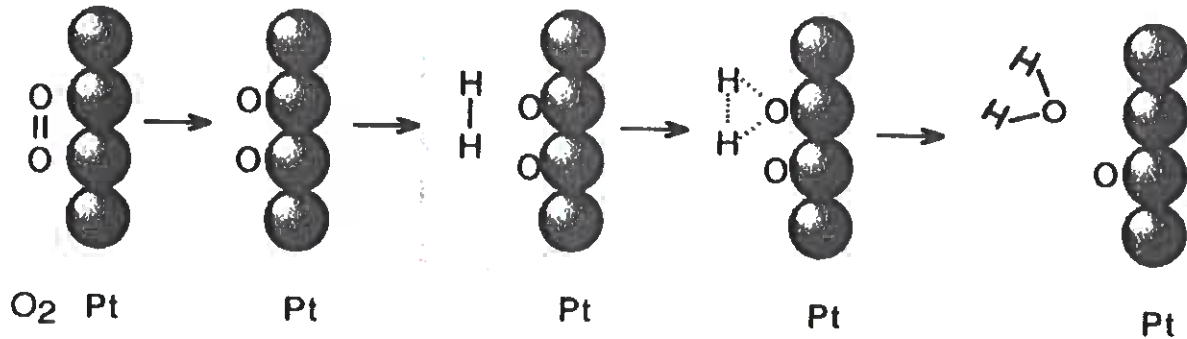
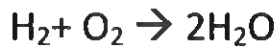
Catalyst – an additional substance which produces an alternate mechanism with a lower activation energy

PE DIAGRAM SHOWING THE UNCATALYZED AND THE CATALYZED REACTION



- energy required (E_a) is less with catalyst, so at the same temperature, **more** molecules can make it over the "barrier" so reaction rate \uparrow (eg. lower standards for a pass, eg. 30% will let more students pass!)
- catalyzed reactions usually involve **more steps** but its highest E_a (highest bump) is never as high as the uncatalyzed reaction
- a catalyst NEVER changes the PE of reactants of products - only the route between them. (ΔH stays the same)
- **uncatalyzed** reaction **still continues** at its own slow rate when a catalyst is added. (usually insignificant compared to catalyzed rate)
- if catalyst speeds up **forward** reaction, it also speeds up (reduces E_a for) the **reverse** reaction.

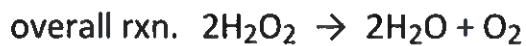
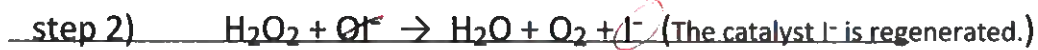
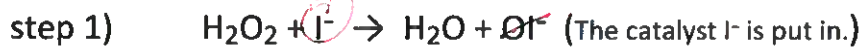
Example:



The catalyst in this reaction is Pt.

The catalyst provides a surface for the atoms of the reactant molecules to help for the other reactants to 'attack' it.

Catalyzed Mechanism:



pg. 34 #56-61

*OI⁻ is intermediate
(produced then used up)
I⁻ is catalyst
(added as a reactant
then produced)*