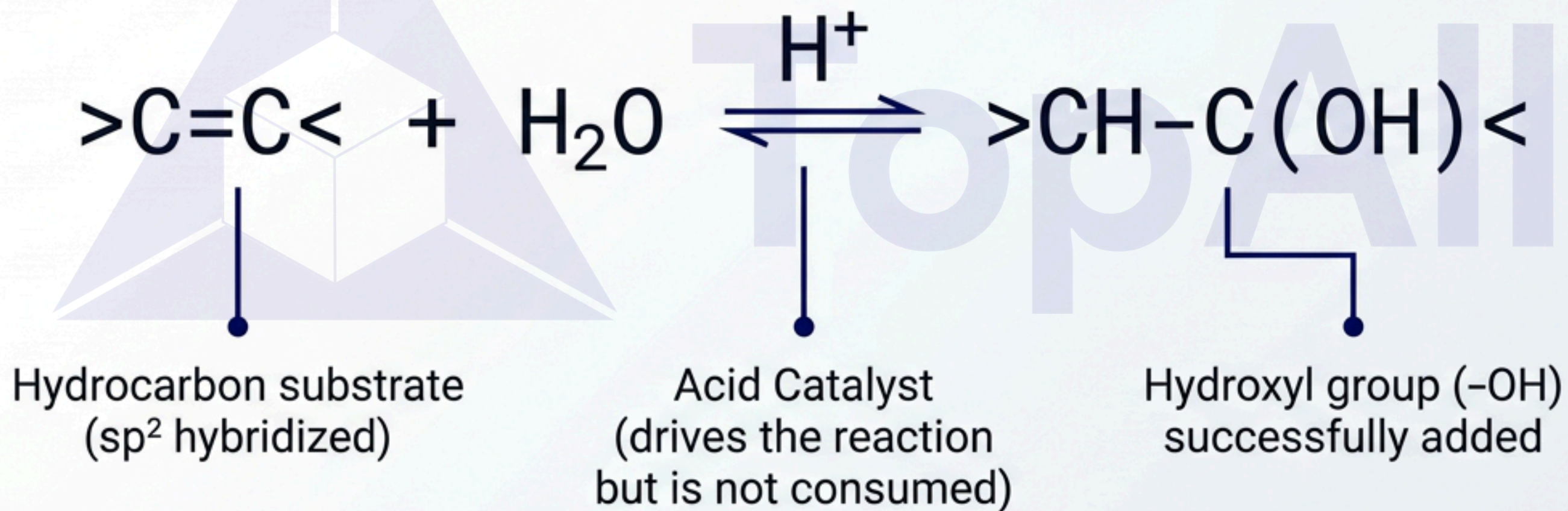


Alkenes to Alcohols

Preparation of Alcohols by Acid Catalysed Hydration

[MACRO TO MICRO : REACTION MECHANISM]

Overall Reaction

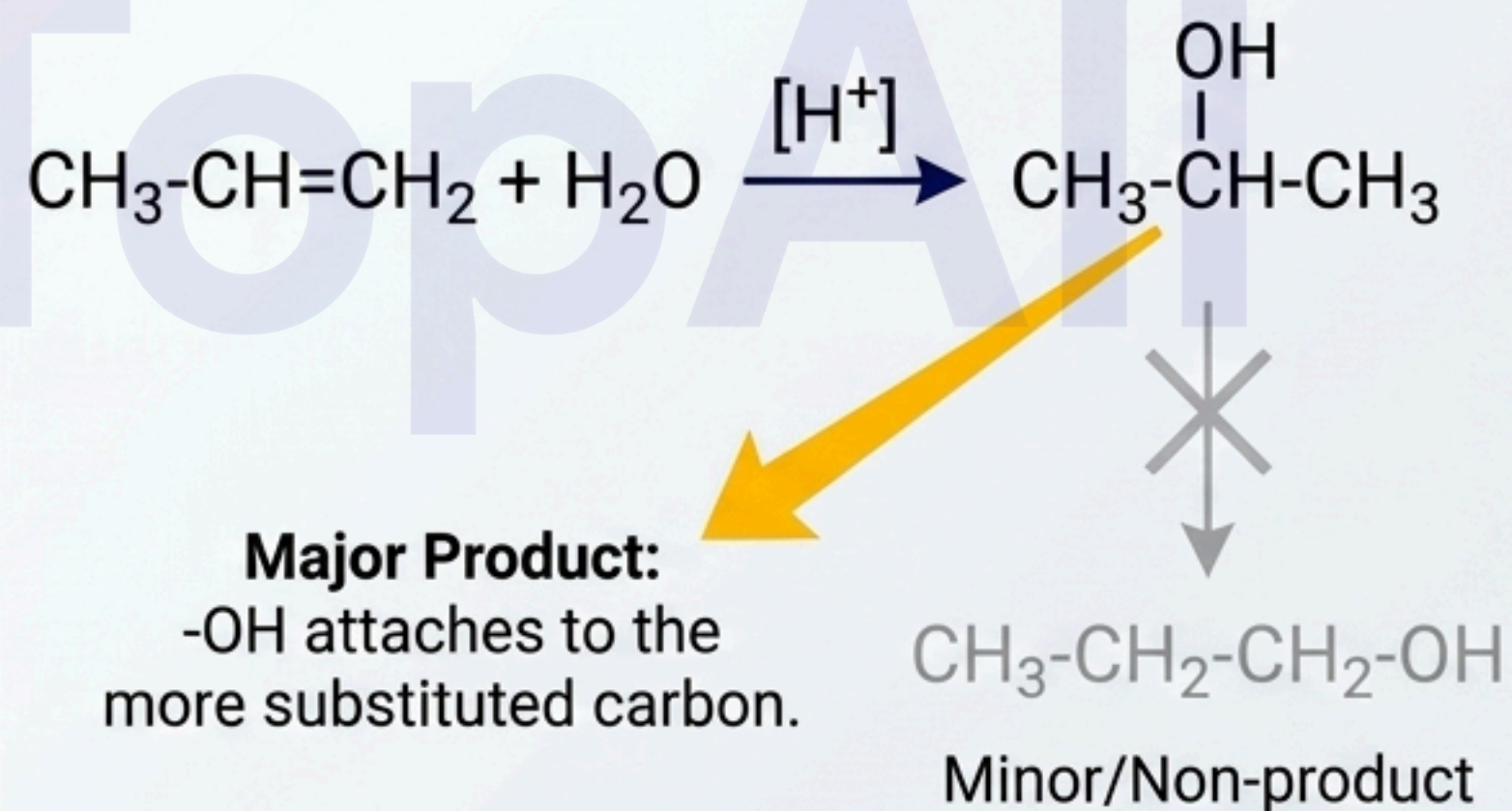


Important Note: Regioselectivity

Markovnikov's Rule

In the case of unsymmetrical alkenes, the addition reaction takes place such that the nucleophile (-OH) attaches to the carbon with the fewest hydrogen atoms (the more substituted carbon).

The Application





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$$E=mc^2$$



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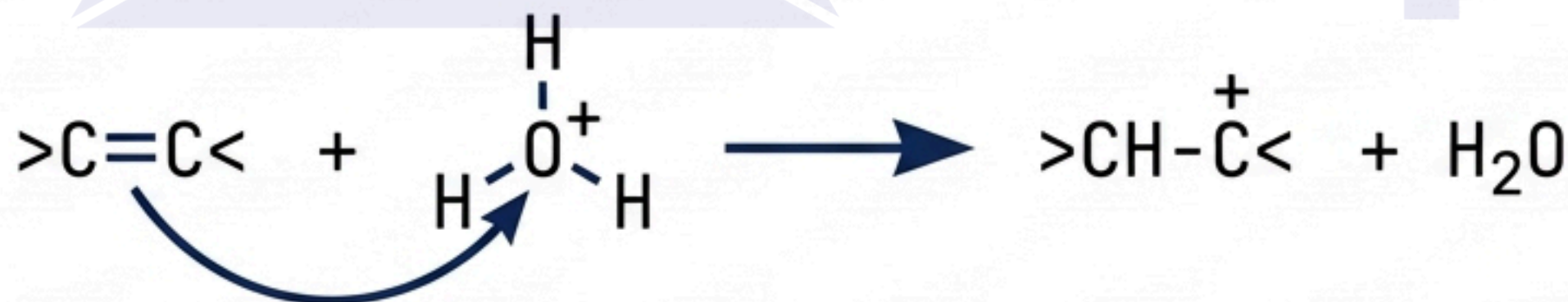


Step 1: Protonation

Electrophilic Attack & Carbocation Formation



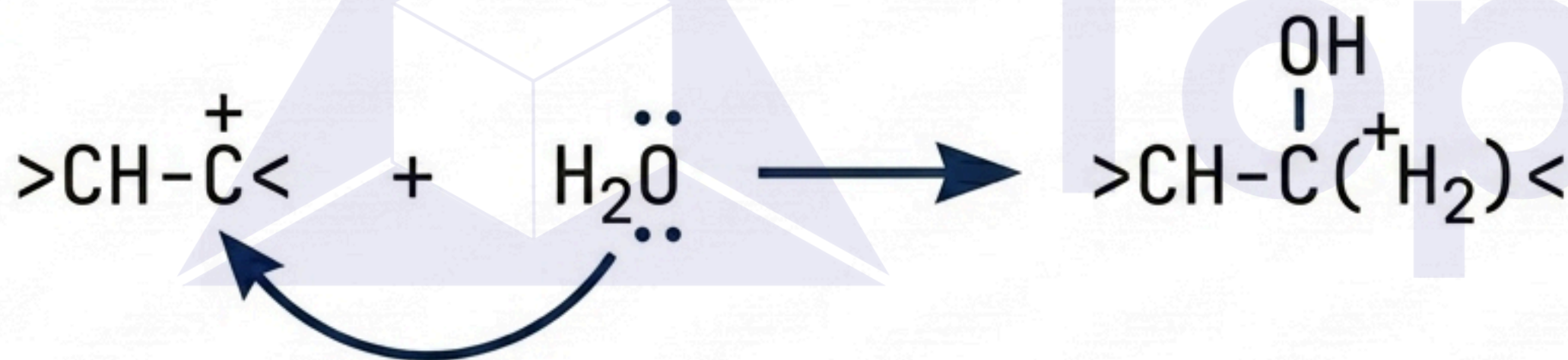
B: The alkene $>\text{C}=\text{C}<$ plus the hydronium $\text{H}-\text{OH})_2$.



The alkene acts as a nucleophile, attacking the electrophilic hydronium ion. This generates a highly reactive, positively charged intermediate: the carbocation.

Step 2: Water Attack

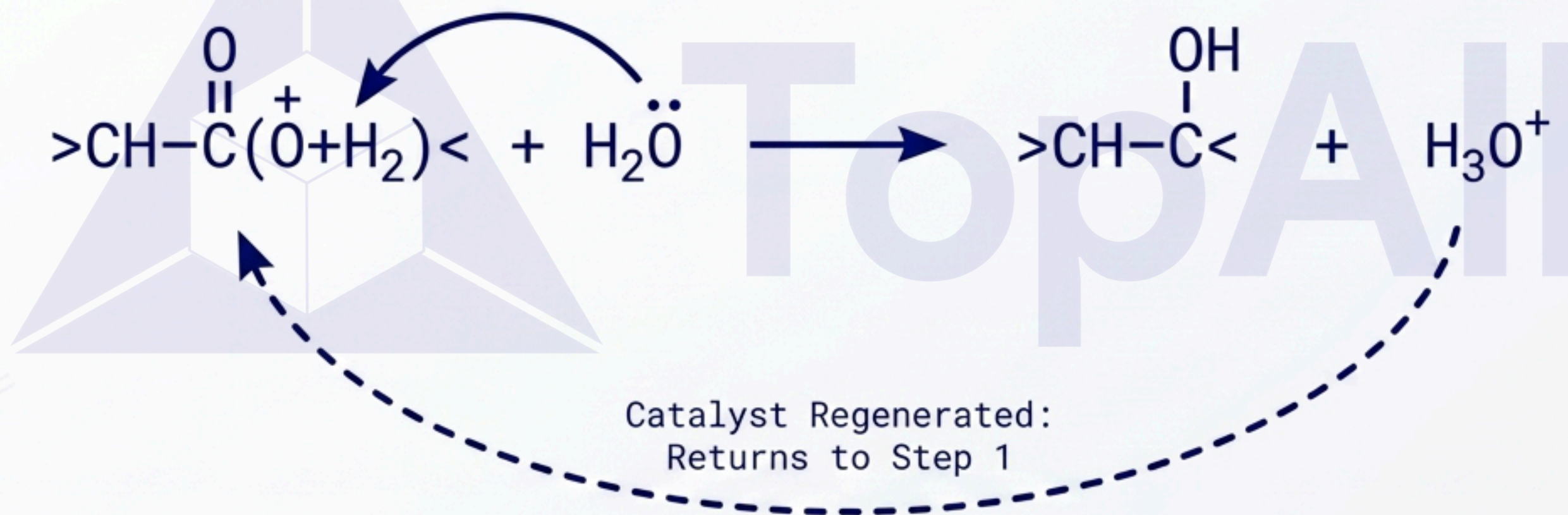
Nucleophilic Addition



The lone pairs on the oxygen atom of the water molecule make it a strong nucleophile. It rushes to stabilize the positive charge of the carbocation, creating a C-O bond.

Step 3: Deprotonation

Restoring the Catalyst



Key Takeaway

Reaction Synthesis

The Transformation.

Input: Alkene + Water.
Output: Alcohol.

The Mechanism.

- 3 distinct steps:
1. Protonation
 2. Nucleophilic Attack
 3. Deprotonation.

The Rules.

Governed by Markovnikov's Rule
(creates the most stable carbocation intermediate).

The Catalyst.

Acid (H^+) is strictly a catalyst. It initiates the reaction but is completely regenerated at the final step.



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