

**IB Chemistry HL Notes**  
**Core and Further Organic Chemistry**

# **Alcohols**

Isaac D. Lim

This content is retailed on the condition that **it is not redistributed without the author's consent**. No part of this document is to be removed from the rest of the content, and be redistributed without the knowledge of the author.

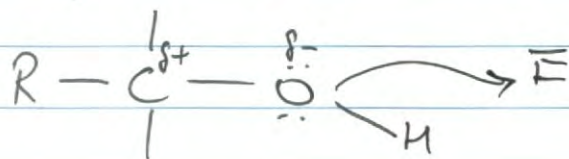
For any queries, please contact the author at [isaacimdc@gmail.com](mailto:isaacimdc@gmail.com).

Visit <http://thequantumbyte.com/ibnotes> for more information.

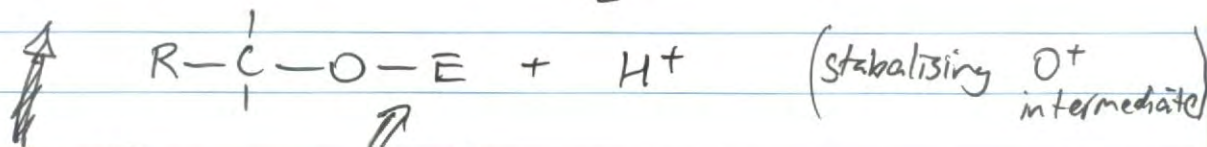
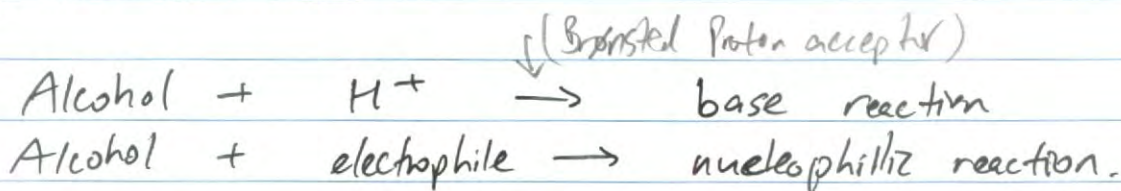
Content © 2009 Isaac D. Lim.

# ALCOHOLS

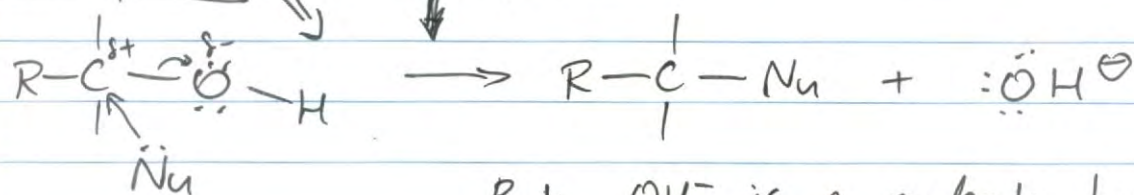
- \* Functional group  $-OH$
- \* Unlike  $[OH]^-$  in alkalis (hydroxide),  $-OH$  group is covalently bonded to C.
- \* Alcohols can hydrogen bond b/c of  $-OH$ , and hence have higher boiling points than their respective alkanes of same  $M_r$  (carbon skeleton)
- \* Can hydrogen bond with  $H_2O$ , hence miscible with water: up to carbon-4-chain.



- \* O atom has lone pairs and can act as a nucleophile, whilst being attacked by an electrophile.
- \* lone pairs can also ~~react~~ bond with  $H^+$ , thus behaving like a base



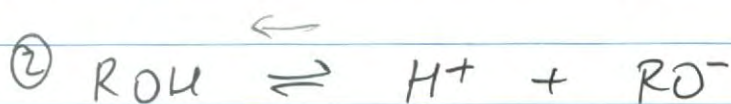
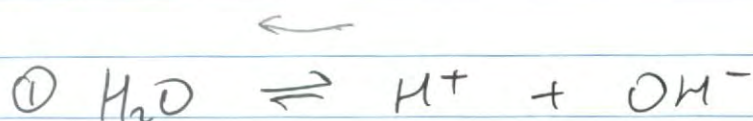
nucleophile  $\rightarrow$  electrophile



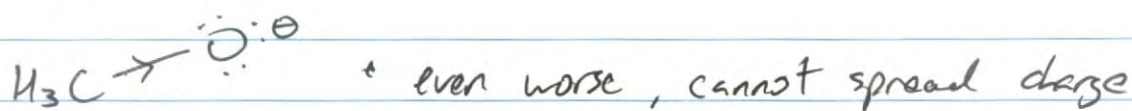
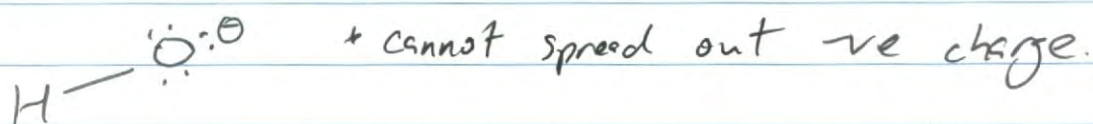
But  $OH^-$  is a moderate base and nucleophile

more likely that  $Nu$  will be broken again, and step is reversed.

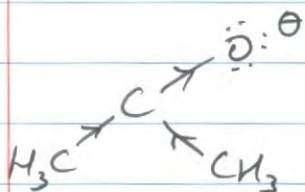
It is a very poor LEAVING GROUP.



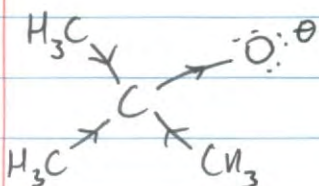
\* Equil<sup>r</sup> lies even more to left side in  $\textcircled{2}$ , so  $\text{RO}^-$  is an even better base than  $\text{OH}^-$ .



\* With inductive effect from alkyl group, charge is 'worsened', even less stable.



\* More inductive effect, less stable,  $\therefore$  2° alcohol ~~more~~ <sup>less</sup> acidiz ( $\uparrow \text{pK}_a$ )



\* greatest inductive effect, so even less stable,  $\therefore$  3° alcohol ~~more~~ <sup>less</sup> acidiz ( $\uparrow \text{pK}_a$ )

Oxidation Combustion of alcohols:

