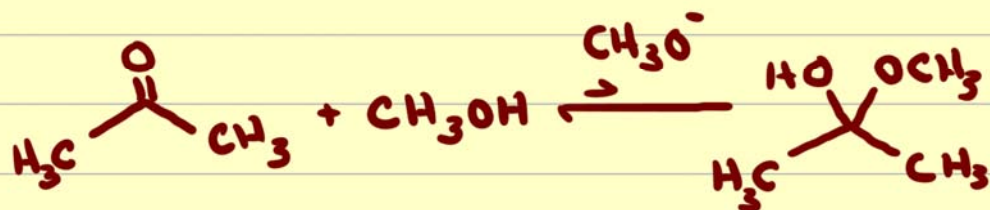


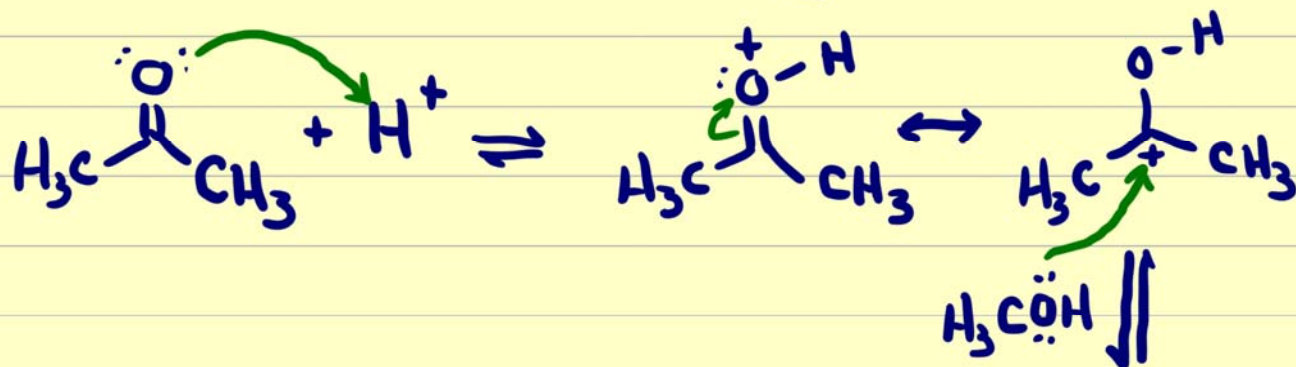
So here's how we ended Monday's lecture - the 'failure' of basic catalysts

BUT THERE'S A SIGNIFICANT PROBLEM.

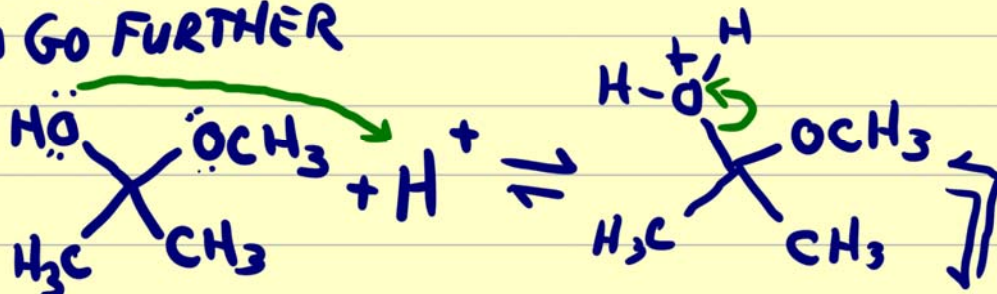
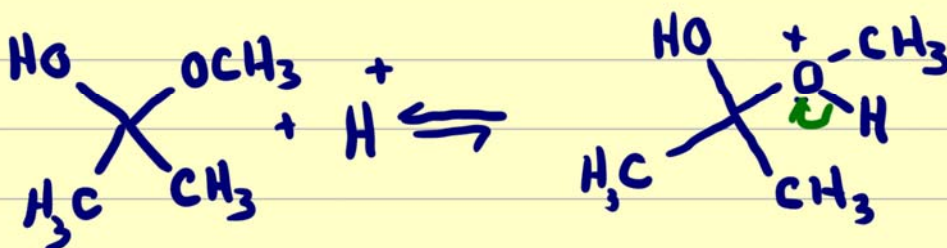


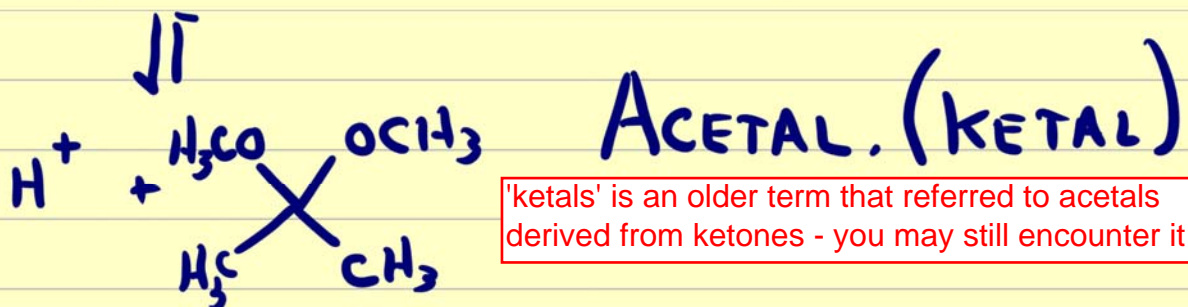
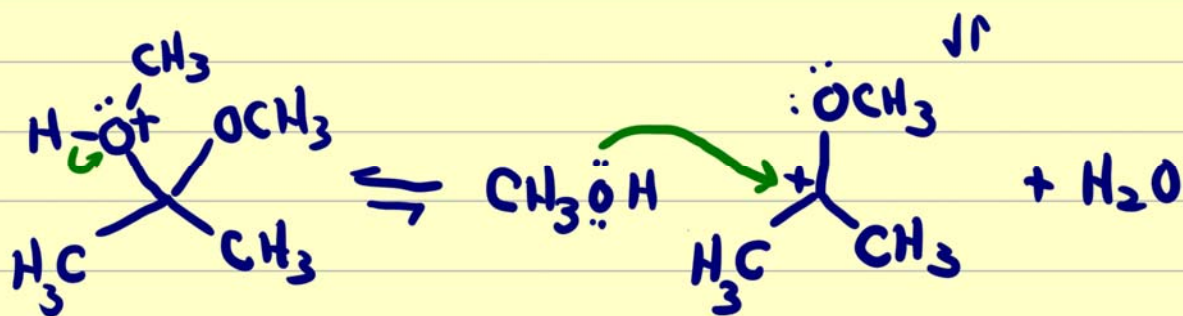
THE K_{eq} (EQUILIBRIUM CONSTANT) IS $\ll 1$
- IN OTHER WORDS, IN THE VAST MAJORITY OF CASES, THIS DOESN'T YIELD PRODUCT.

How ABOUT IN ACID H^+



TO HERE
K_{eq} IS
STILL BAD
BUT RXN
CAN GO FURTHER





'ketals' is an older term that referred to acetals derived from ketones - you may still encounter it

OVERALL...



water can be removed by a drying agent or by azeotropic distillation

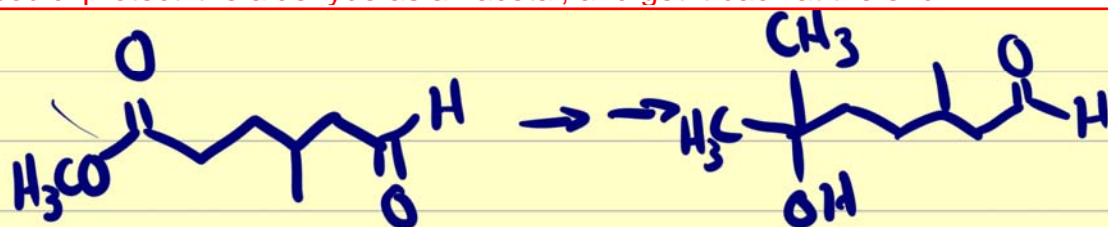
BY REMOVING H_2O , OR USING THE ALCOHOL IN XS, YOU CAN GET EXCELLENT YIELDS OF THE ACETAL

USE - ACETALS ARE ETHERS

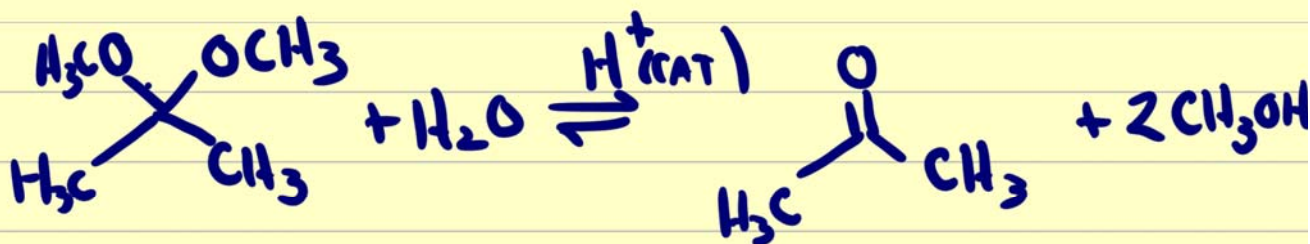
\therefore INERT TO BASES, NUCLEOPHILES, GRIGNARD REAGENTS, " H^- " SOURCES

∴ PROTECTING GROUP FOR KETONES, ALDEHYDES

i.e., what if you want to do a Grignard reaction with an ester, but not the aldehyde? You could 'protect' the aldehyde as an acetal, and get it back at the end...



IF WE TAKE ACETAL, ADD $H_2O + H^+$

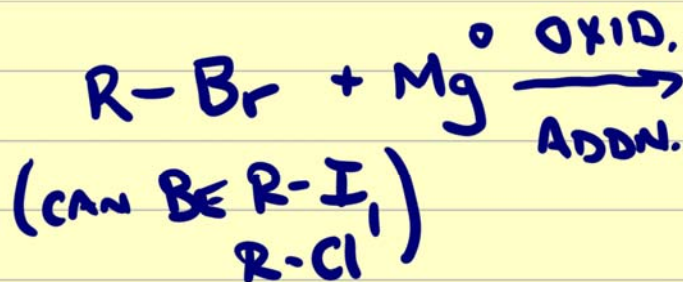


get back the ketone (or aldehyde)

CARBON NUCLEOPHILES

- How do we get $>C^-$?

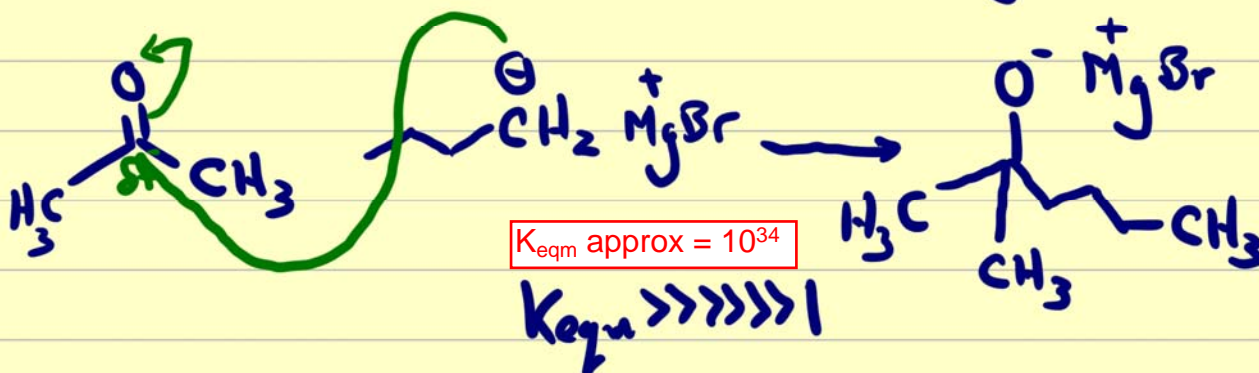
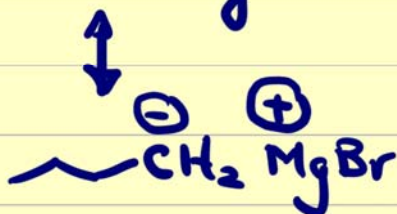
GRIGNARD REAGENT.



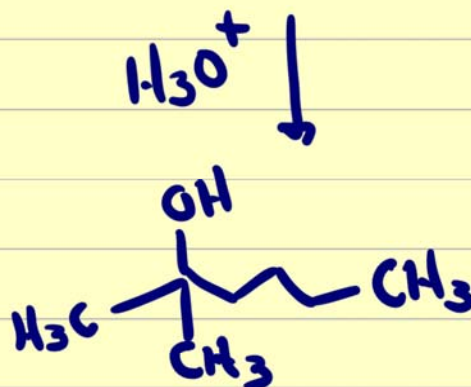
it's really polar covalent, but we'll consider it ionic for simplicity



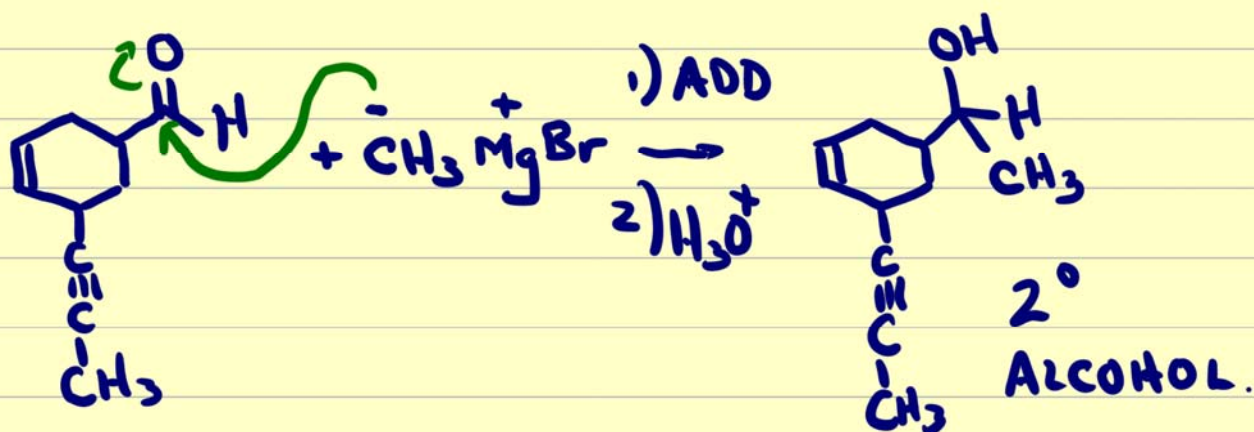
- EXTREMELY NUCLEOPHILIC



3° ALCOHOL

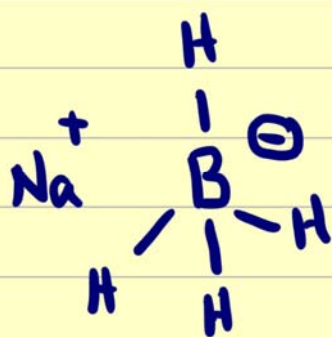


- VERY POLAR REAGENT, SO NON POLAR
C=C'S, C-C≡C-C ARE INERT



How About "H⁻" NUCLEOPHILES?

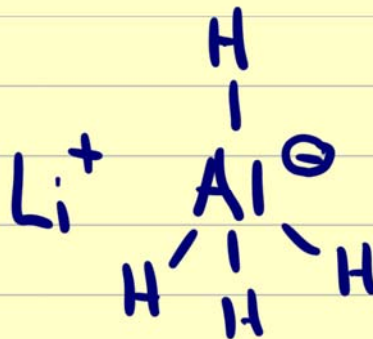
TWO REAGENTS ARE USED



NaBH₄

SODIUM BOROHYDRIDE

MILD, ALDEHYDES & KETONES ONLY.



LiAlH₄

LITHIUM ALUMINUM HYDRIDE

V. REACTIVE-POOR.