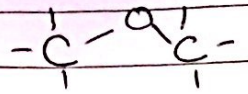
No.

CH. 8 ETHERS:



8.1 Naming of ethers:

* We name them as ethers when the 2 alkyl groups are Kinda close to each other (small difference in # of C)

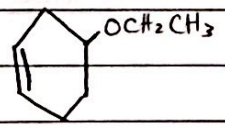
- $CH_3CH_2-O-CH_2CH_3$ — Diethyl ether
- $CH_3CH_2CH_2-O-CH_2CH_2CH_2CH_3$ — butyl propyl ether

* other than that its treated as a subs (alcoxy)

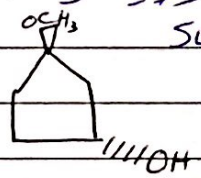
$CH_3CH(OCH_3)CH_2CH_2CH_3$

- 2-methoxypentane

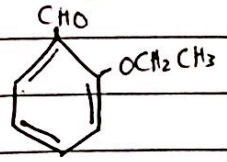
* مجرد وجود مجموعة وظيفية واحدة في ال compound تتعامل معهم ال ethers على أنه sub

eg. 

4-ethoxy cyclohexane

eg. 

trans-3-methoxy cyclopentanol

eg. 

- 2-ethexy benzaldehyde
- O- " " "

8.2 Physical properties

1 * Ethers have low boiling points same as alkanes
2 * Ethers have Solubility in water same as alcohol

تقريباً نفس الكتلة

	$CH_3CH_2OCH_2CH_3$	$CH_3CH_2CH_2CH_2CH_3$	$CH_3CH_2CH_2CH_2OH$
B.P°C	38	36	117
solubility in 100g water	8.3g	insoluble	7.8g

قريبة

* أي مركب عضوي فيه Van der walls

8

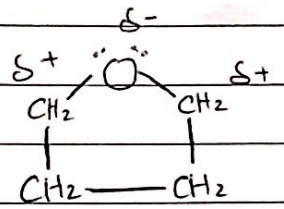
No.

A-cyclic ether $\overset{\delta+}{CH_3CH_2} - \overset{\delta-}{O} - \overset{\delta+}{CH_2CH_3}$ ← Bent الروابط *
(مثل H_2O)

* dipole-dipole interactions is not effecient
(C-O is a polar bond)

because the hydrocarbonic wings shielded the polar bond which prevents dipole-dipole interactions.

cyclic ether

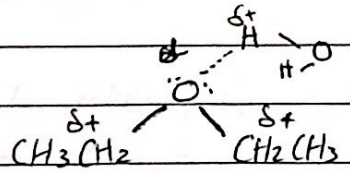


* the wing are tied back now ethers can form dipole-dipole interactions together

63°C

THF → اسم خاص له

* ethers are soluble in water because they have lone pair of e^- so they form hydrogen bonds with water + the water molecule is small & it can sneak in & form the hydrogen bonds.



* ethers are inert compounds they don't do these reactions:
~~oxidized~~, ~~reduced~~.

* At low pH → only case of reaction
↳ strong acids

* excellent solvents
* Protecting groups for alcohols
} ethers are:

* & they are good solvents; why?
1) Inert (لا يتدخلون في التفاعل)
2) lowering E.A
3) Polar & non polar parts (يذوبون النوعين)

No.

$$CH_3CH_2-O-CH_2CH_3 \xrightarrow{O_2} CH_3\underset{OOH}{CH}-O-CH_2CH_3$$

سلبية :

it forms peroxides

↓

cause explosions & its toxic

* peroxides are used in whitneing teeth.

8.4 Carignard reagent

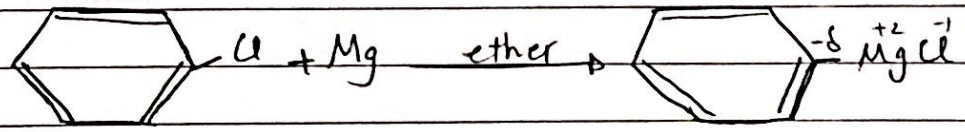
alkyl halide + Mg $\xrightarrow{ether}$

coupling reaction

(تفاعل تآكسد واختزال ← Mg بنستخدم الـ X)

big partial neg.

$$CH_3Br + Mg \xrightarrow{:\ddot{O}:} \underbrace{\overset{-\delta}{C}H_3}_{Nu} \overset{+2}{Mg}Br^{-1}$$



* The importance of it is prepairing a Nu carbon

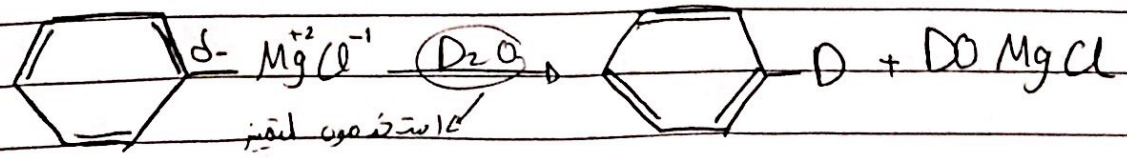
* فائدة الـ ether أنه يجعل غرينارد مستقر

("الشحنة السالبة على C ليست كاملة بالتالي الـ Mg لم يتم معادلتها تماما")

$$CH_3Mg^{+2}Br^{-}$$

strong Nu = strong base ⟶ so if we had water : G will be corrupted

$$\cdot\ CH_3Mg^{+2}Br^{-} \xrightarrow{H-OH} \underbrace{CH_4 + HOMgBr}_{\text{I don't need these compounds}}$$



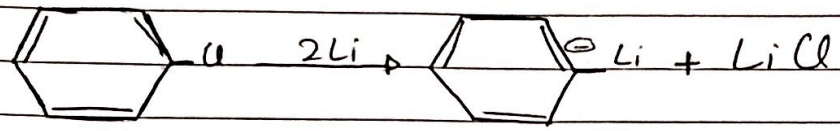
كاستخدموه لتمييز

ما الذي يخرب G

No.

* Any protic solvent destroy G.
* Thats why all conditions should be dry.

*بدل Mg ممكن نستخدم 2Li.



* Organometalic reagents → Ca

8.5 Preparation of ethers

① $2\ CH_3CH_2OH \xrightarrow[150^\circ C]{H_2SO_4} CH_3CH_2OCH_2CH_3$

ليه ما بصير elimination؟

② From alkenes