

Organic Chemistry Mindmap

Alkanes

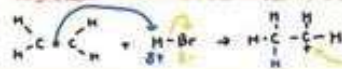
- saturated C-C bond
- C_nH_{2n+2}
- unreactivity
 - strength and polarity of C-C bonds
- flammable
 - burns: $C/cO/CO_2 + H_2O$
 - burning is exothermic (releases heat)

Alkenes

- unsaturated C=C bond
- C_nH_{2n}
- Oxidation with $KMnO_4$ or $K_2Cr_2O_7$
- addition polymerisation
 - only forms the polymer

Halogenoalkanes

- -X functional group
- $C_nH_{2n+1}X$
- S_N1 reactions
 - one step, forms X^- ions
- S_N2 reactions
 - two steps, forms tertiary halogenoalkane & tertiary carbocation
- Reaction mechanism of electrophilic addition
 - halogen/bond breaks bond and attacks C=C bond



Alcohols

- OH functional group
- $C_nH_{2n+1}OH$
- forms alkoxides
 - when reacting with reactive metals
- test for alcohols
 - by oxidising then halogenising, form yellow ppt. with HI

Carboxylic Acid

- COOH functional group
- $C_nH_{2n+1}COOH$
- behaves like any other acid
 - reacts with metals, hydrides, carbonates, oxides

Esters

- $C(=O)O$ functional group
- $C_nH_{2n+1}COOC_mH_{2m+1}$
- naming convention
 - alcohol first then carboxylic acid
- used as flavourings

Amide

- NH_2/CN functional group
- $C_nH_{2n+1}NH_2/C_nH_{2n+1}CN$
- fertilisers
 - contains N which is necessary for plant life

Aldehydes

- $C=O$ functional group
- $C_nH_{2n+1}CHO$

Ketones

- $C(=O)$ functional group
- $C_nH_{2n+1}CHO$

Markovnikov's Rule

H will bond to C atom bonded to the most alkyl groups
hydrogen is gay!

(primary) oxidation
Reduction

esterification
 H_2SO_4/H_3PO_4
catalyst

add strong acid
add strong alkali

sodium carboxylate
add dilute alkali

hydrolysis
with $H_2O/NaOH$

forms secondary alcohol

reduction
with H_2/Ni or H_2/Pt

forms primary alcohol

oxidation
hot conc. $KMnO_4$ (tertiary)

hydroxynitriles
contains both OH & CN

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