

Heterocyclic compounds :

Furan

(Organic chemistry)

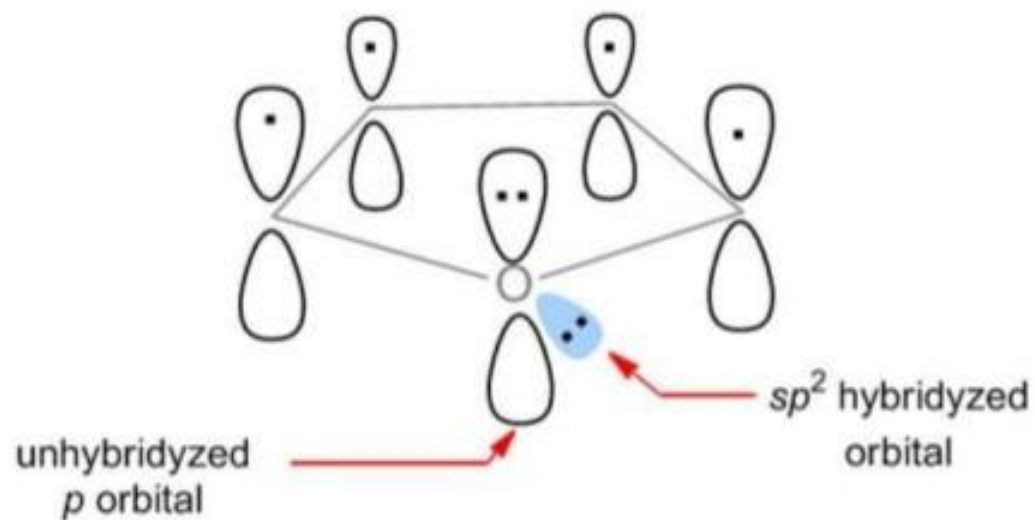
BSc. Part III (Hons.)

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FURAN

Properties

1. Aromaticity



FURAN

Properties

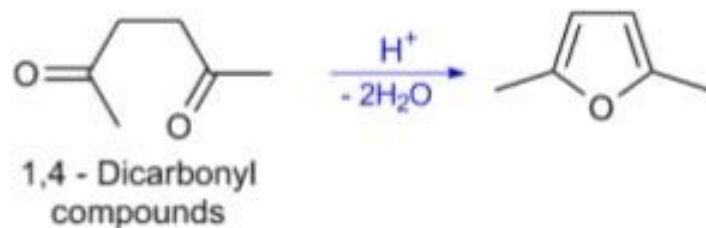
1. Aromaticity

- Furan have 4 C and 1 O , all are sp^2 hybridized
- sp^2 hybridization is **planar**, it makes a planar furan ring structure.
- Each ring atom also contains unhybridized p orbital that is perpendicular to the plane of σ bonds (plane of ring).
- Here p orbitals are parallel to each other, so overlapping btwn p orbitals is possible.
- the total nu of non bonding e- are 6 (4 of four C, 2 from one O)
- The resonance of 6 e- follows the Hückel's rule
- So the furan is aromatic .

FURAN

Synthesis

1. Paal-Knorr synthesis of furan
 - Acid catalysed ,cyclising dehydration of 1,4 - dicarbonyl compounds.

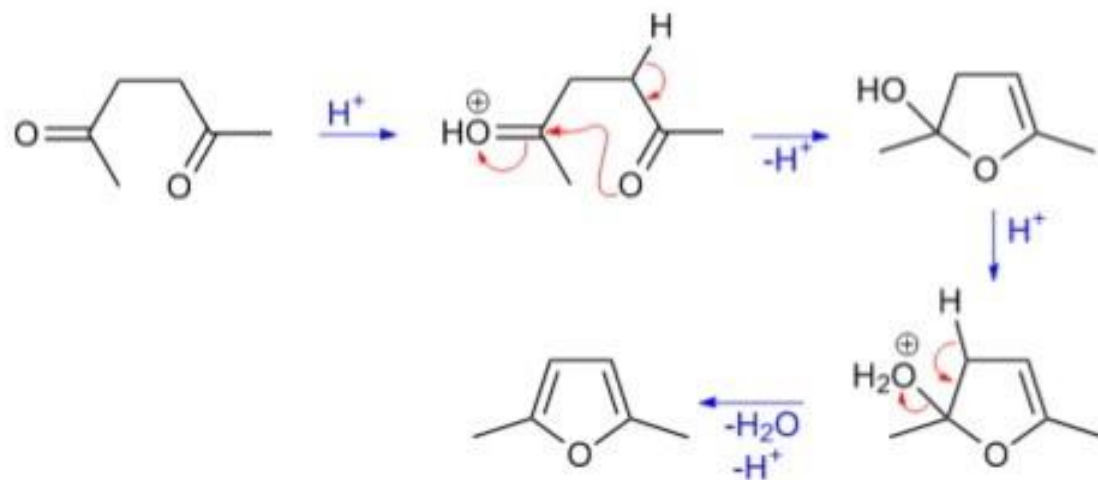


FURAN

Synthesis

1. Paal-Knorr synthesis of furan

Mechanism

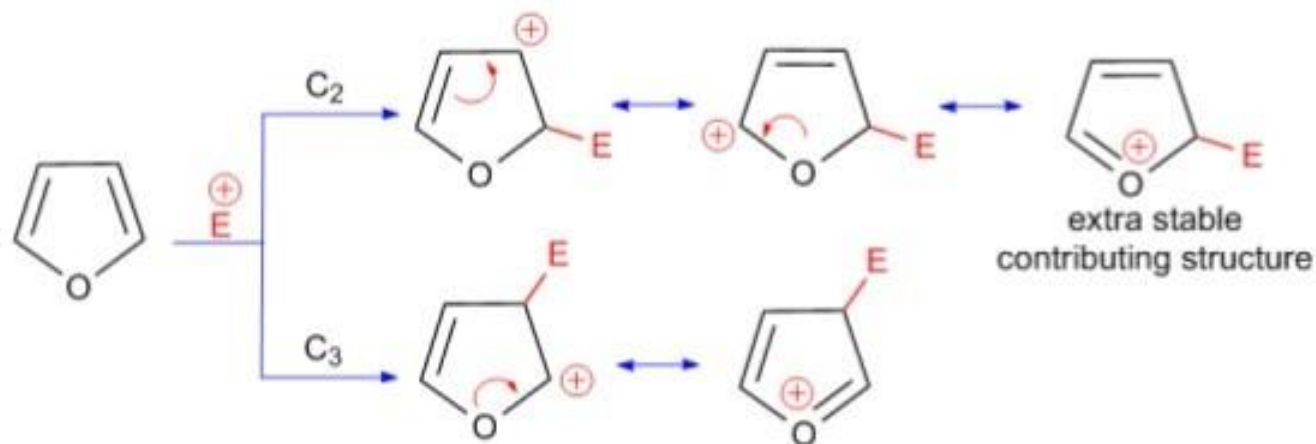


FURAN

Reactions

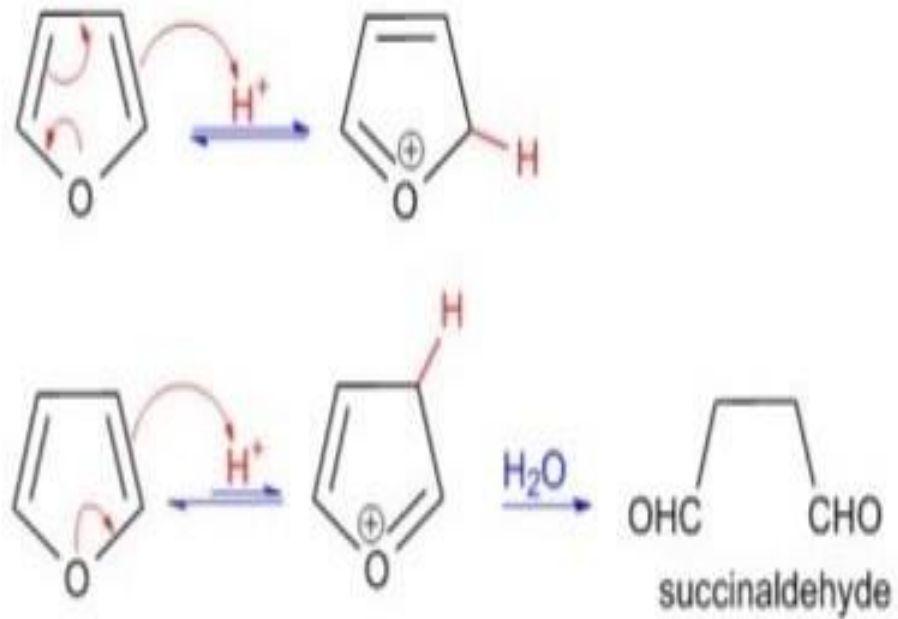
1. Electrophilic substitution

furan undergoes electrophilic substitution reaction at 2nd position



2 reasons...

- C2 attack gives more resonance contributing structures than C3.
- Extra stable contributing structure generates upon C2 attack



2. Reduction

