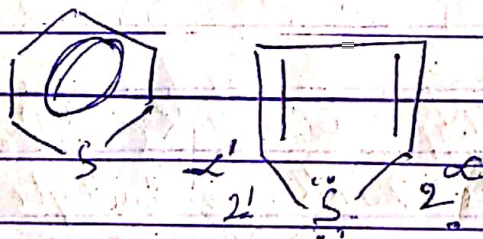
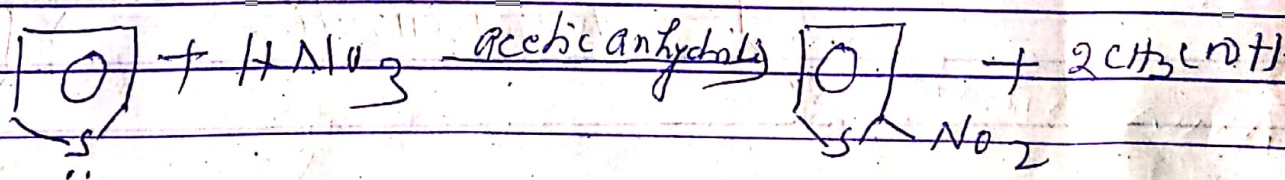


Chemical properties of thiophene:- Like Pyrrole and furan, thiophene are not basic in nature. It is aromatic compound and like pyrrole and furan and participates in electrophilic substitution.

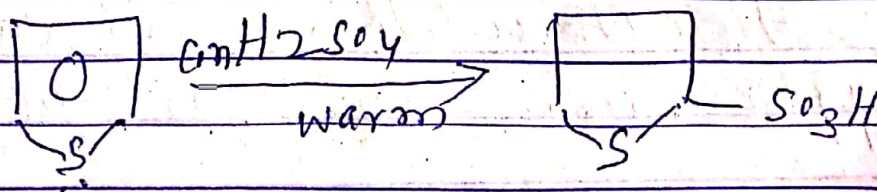
Electrophilic substitutions — Like furan and Pyrrole it goes under electrophilic substitution on C-2 and electrophilic substitution occurs on C-3 only when position C-2 is blocked.



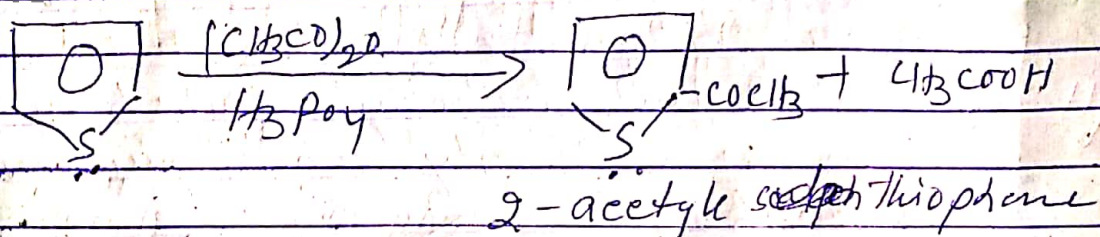
ii) Nitric acid in presence of acetic anhydride nitrated thiophene to 2-nitrothiophene



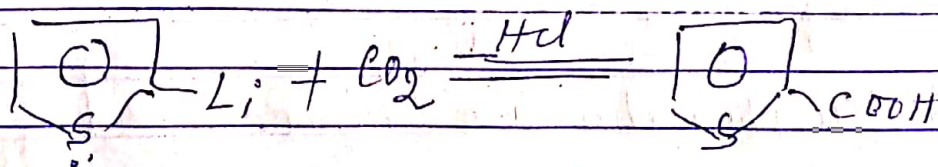
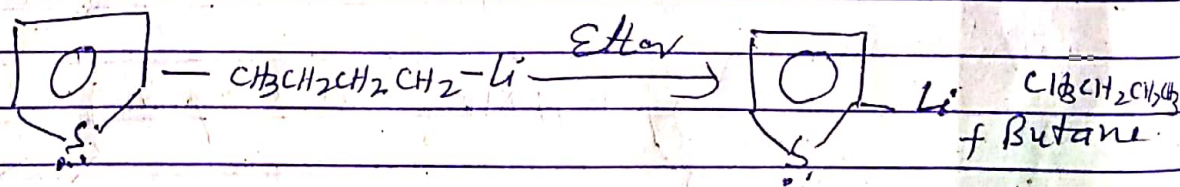
iii) sulphonation :- Sulphonation of thiophene is done with ^{conc} sulphuric acid to yield thiophene-2-sulphonic acid.



(iii) Friedal-craft acylation: - Thiophene is acylated with acetic anhydride in presence of ~~the~~ phosphoric acid to yield 2-acetyl thiophene.



(iv) Reaction with Alkyl lithium: - Thiophene reacts with n-butyl lithium to form 2-thiophene lithium which can be used to form many derivatives.

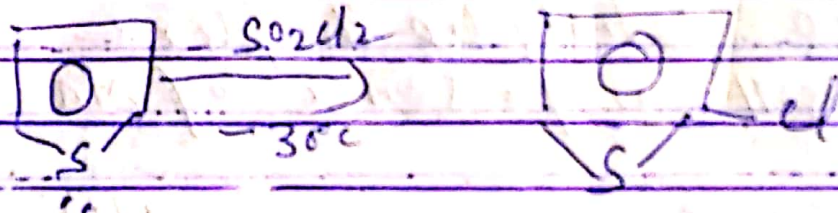


thiophene two carboxylic acid

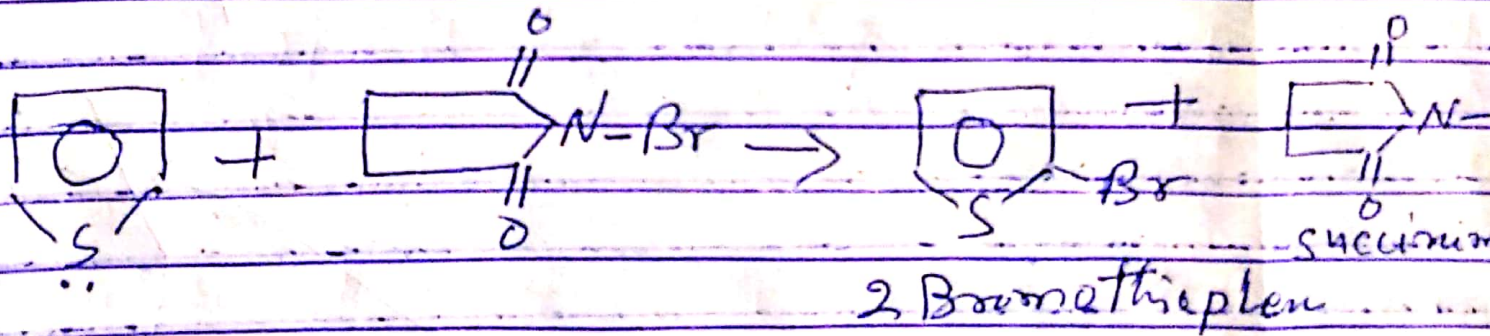
2-Thiophene lithium has variety of application in synthesis.

(v) Halogenation - Thiophene reacts with chlorine and bromine to form poly halogenated compound at room temperature.

(a) Thiophene reacts at -30°C to form ~~mono chloro~~ mono-chloro derivative with SO_2Cl_2

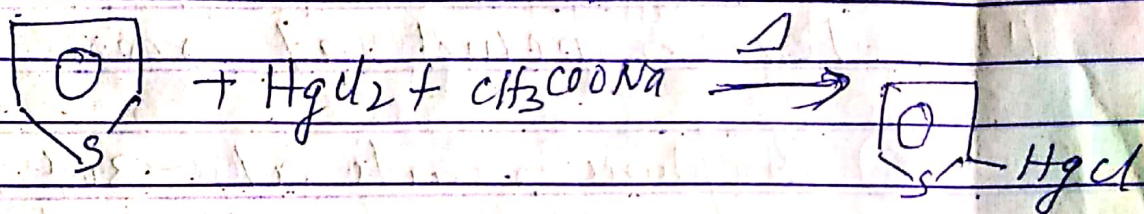


(b) Thiophene form 2-bromothiophene with N-Bromosuccinimide



~~1,4-dibromothiophene~~

(VI) Mercuration — Thiophene reacts with mercuric chloride & in aq sodium acetate to produce 2-chloromercurithiophene.



2. Reduction — Thiophene is reduced to tetrahydrothiophene with $\text{C}_2\text{H}_5\text{OH}$ in presence of Na-Hg

