(29) **Today**

Chap 16.1 - 16.4: Electrophilic Aromatic Substitution

Next Class (30)

Test 3

Chap 21: 21.3, 21.4, 21.6. 21.7

Chap 10: 10.6

Chap 19: 19.4, 19.7, 19.5, 19.10, 19.8, 19.11

(31) **Second Class from Today**

Chap 16.1 - 16.4: Electrophilic Aromatic Substitution

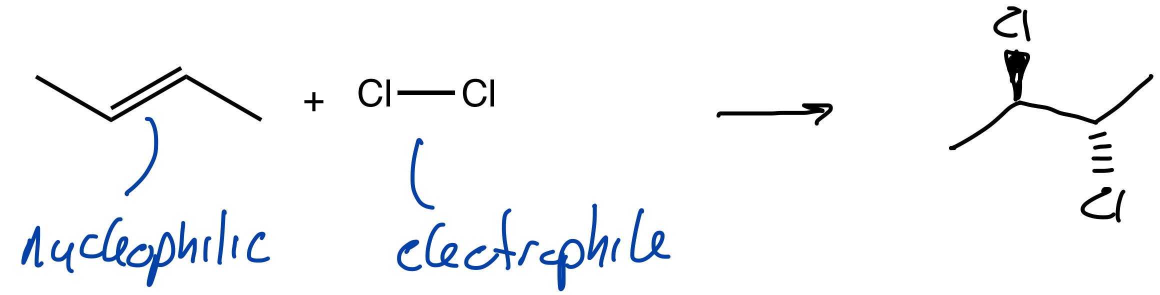
Third Class from Today (32)

Chap 16.1 - 16.4: Electrophilic Aromatic Substitution

On-line review session Thrus 4/16 from 7:30 to 9:00

Electrophilic Aromatic Substitution (not electrophilic addition)

Section 16.1 - 16.3

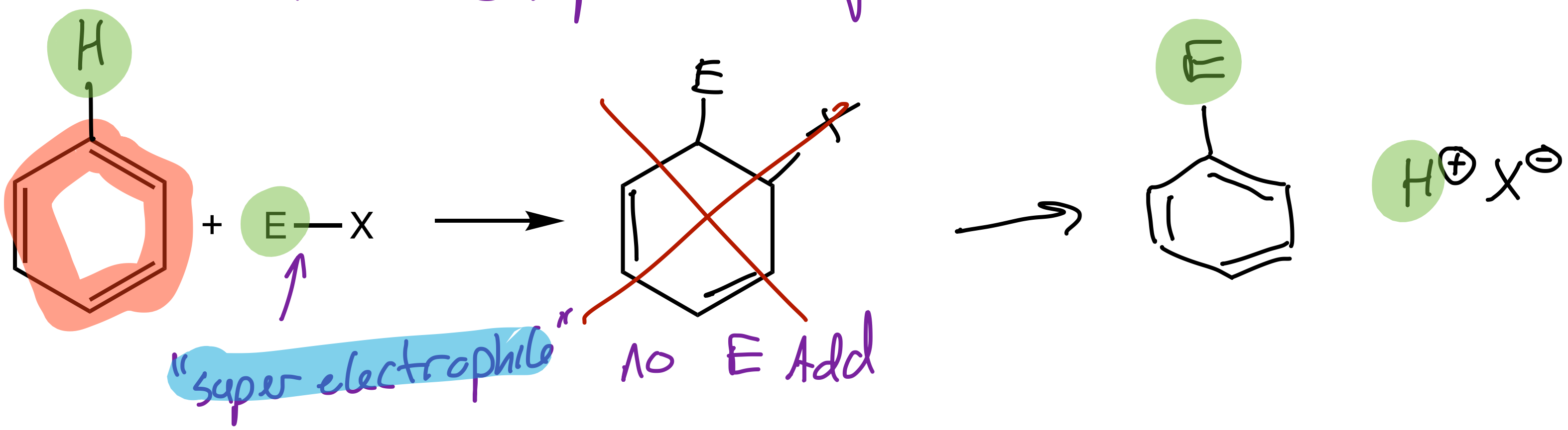


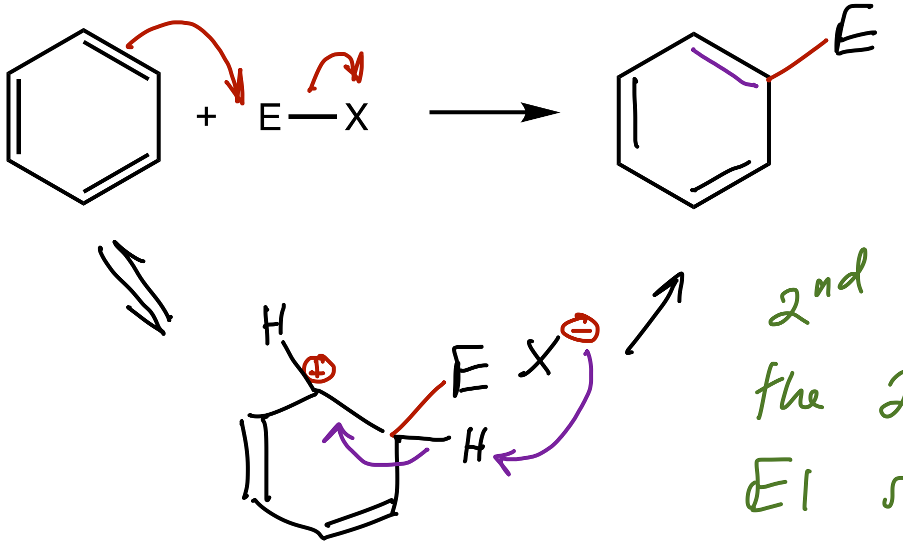
electrophilic addition
E Add

E Add

less reactive due to aromaticity

not electrophilic enough to react





1st step is like E Add

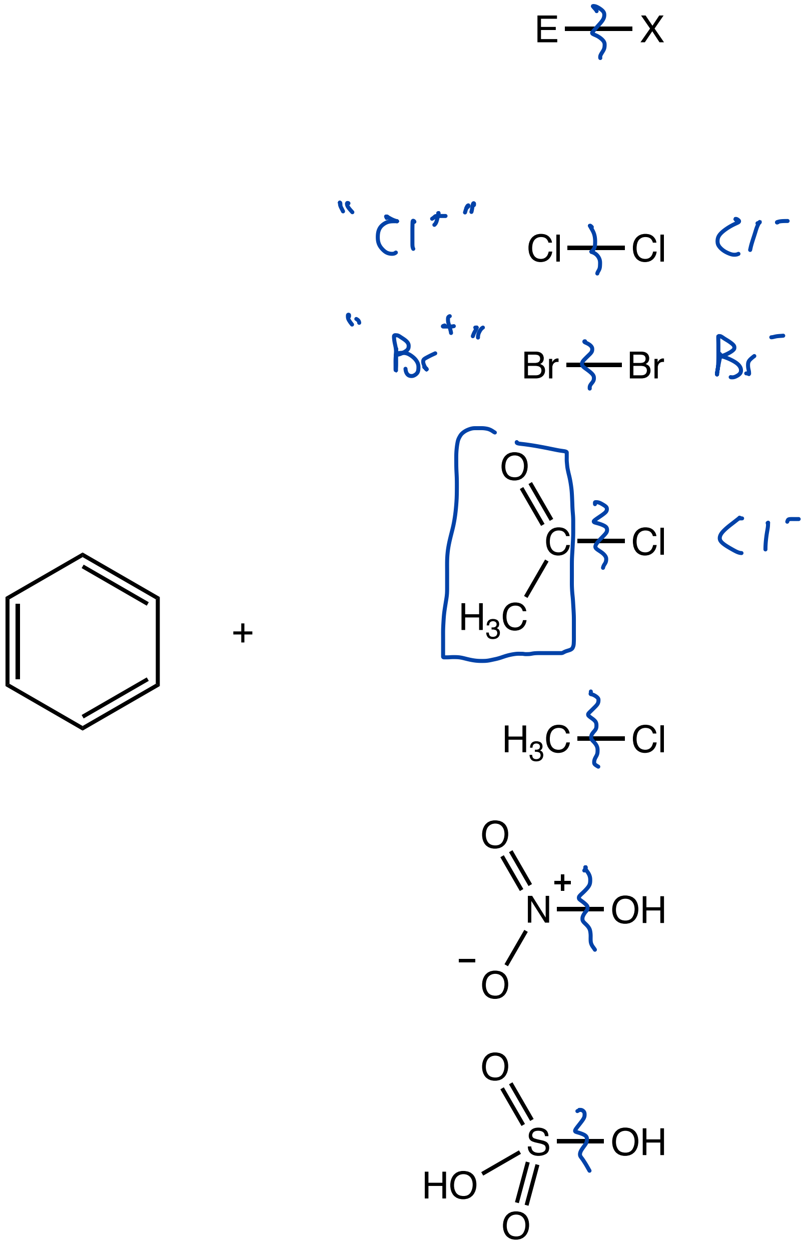
2nd step is like the 2nd step of an E1 rxn

loss of aromaticity in the intermediate is why "super electrophiles" are needed

reforming the aromatic system makes it easier for the weak base to abstract the H^+

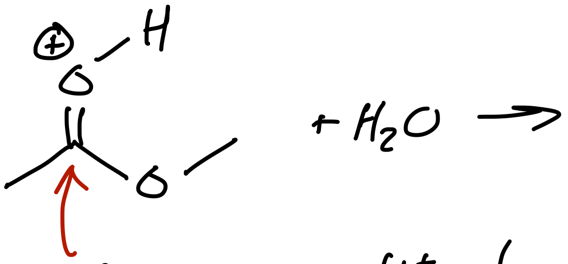
Electrophilic Aromatic Substitution

Section 16.1 - 16.3



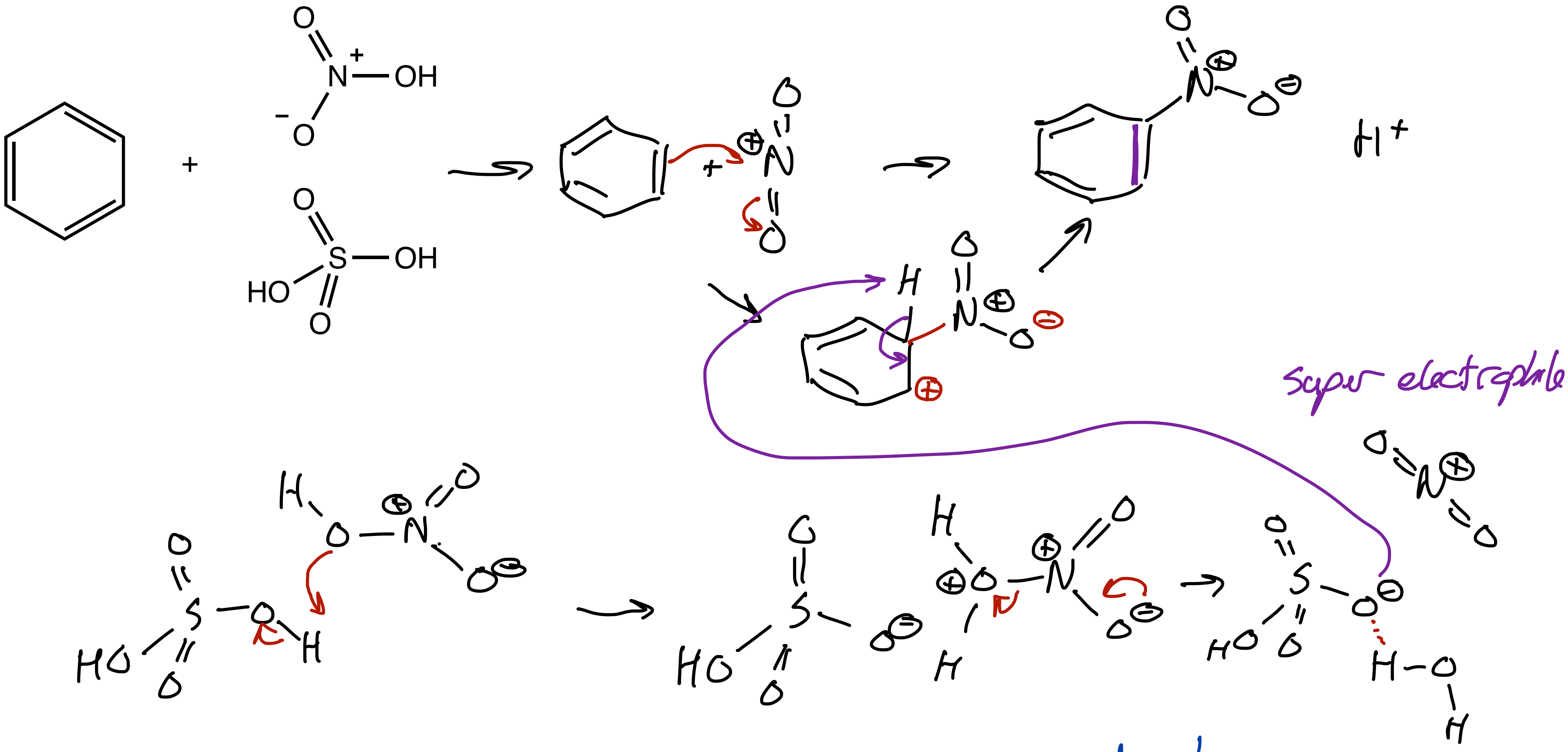
these are all electrophiles

on their own, they are not electrophilic enough



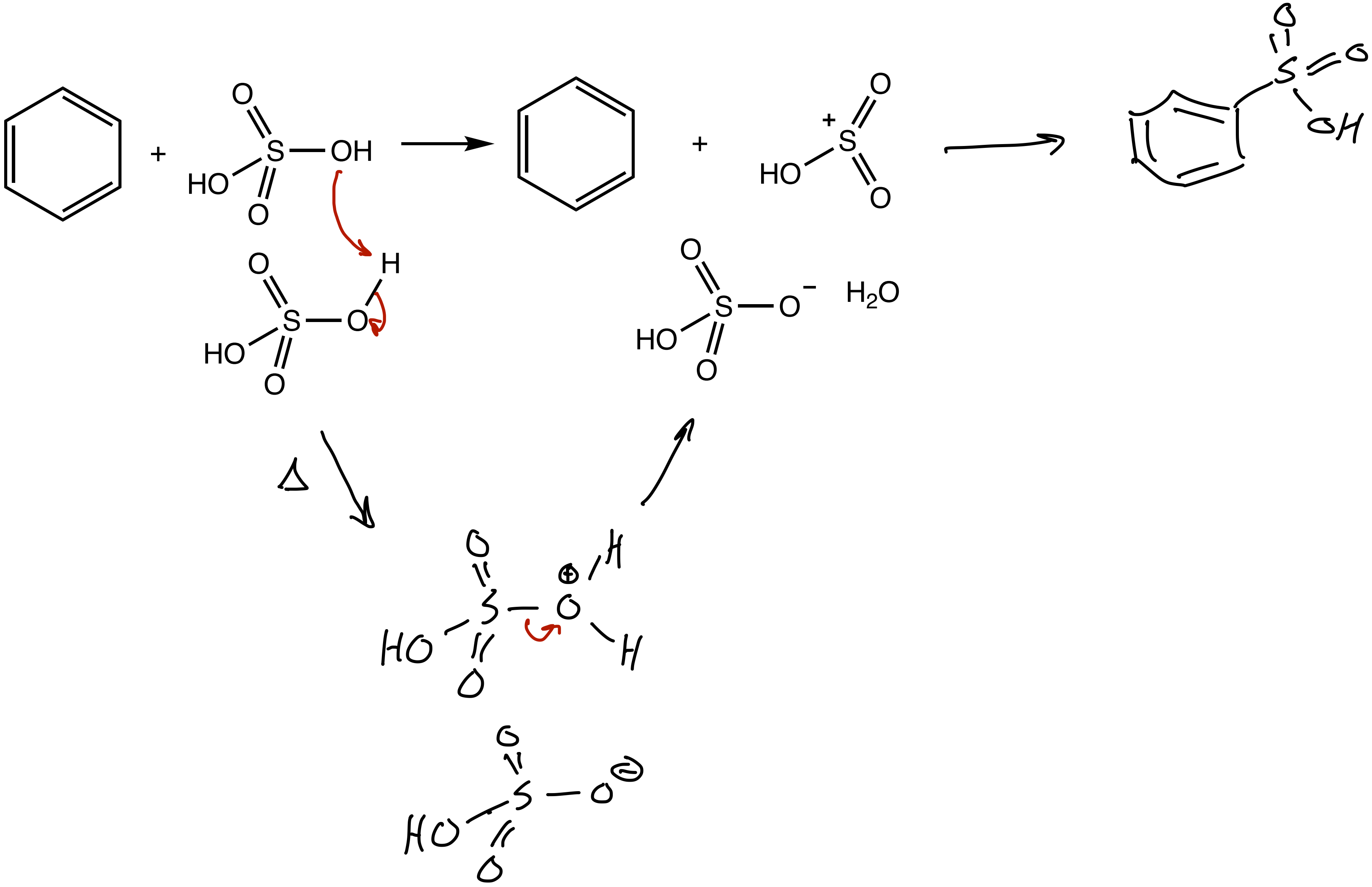
adding an H^+ to the O drew e⁻'s away from the C and made it more electrophilic

Nitration and Sulfonation



H_2SO_4 is a stronger acid than HNO_3, and it can protonate HNO_3

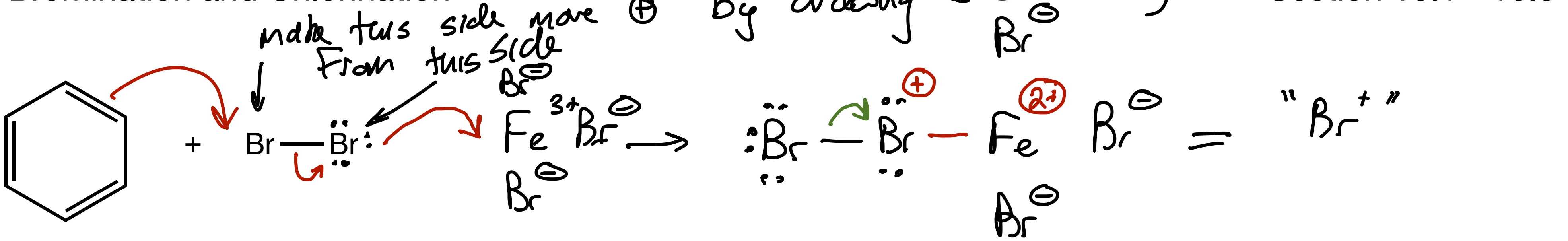
Sulfonation



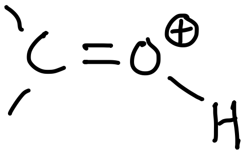
Bromination and Chlorination

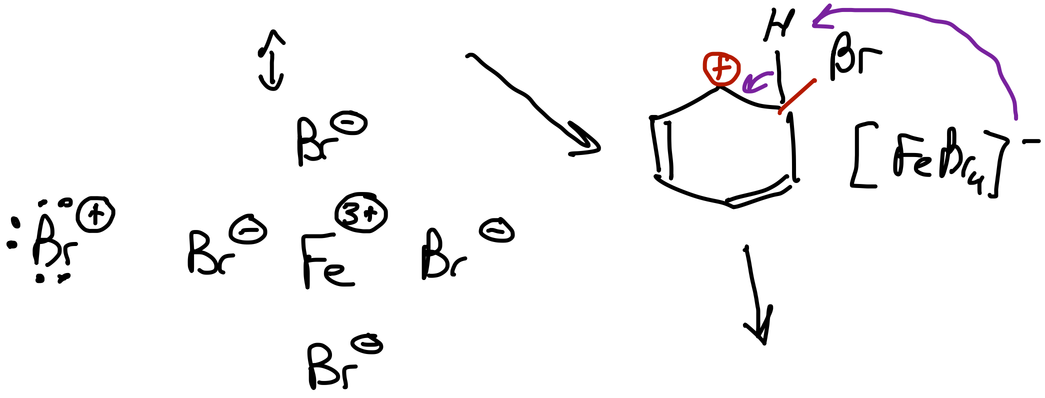
make this side more ⊕ by drawing e⁻'s away

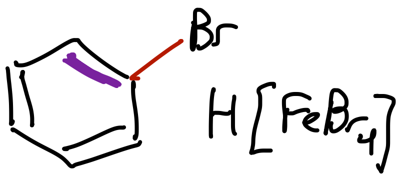
From this side

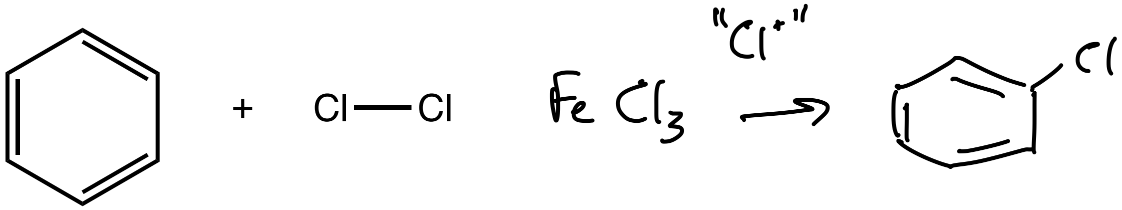


Lewis acidic Fe^{3+} will attract lp e⁻'s From Br





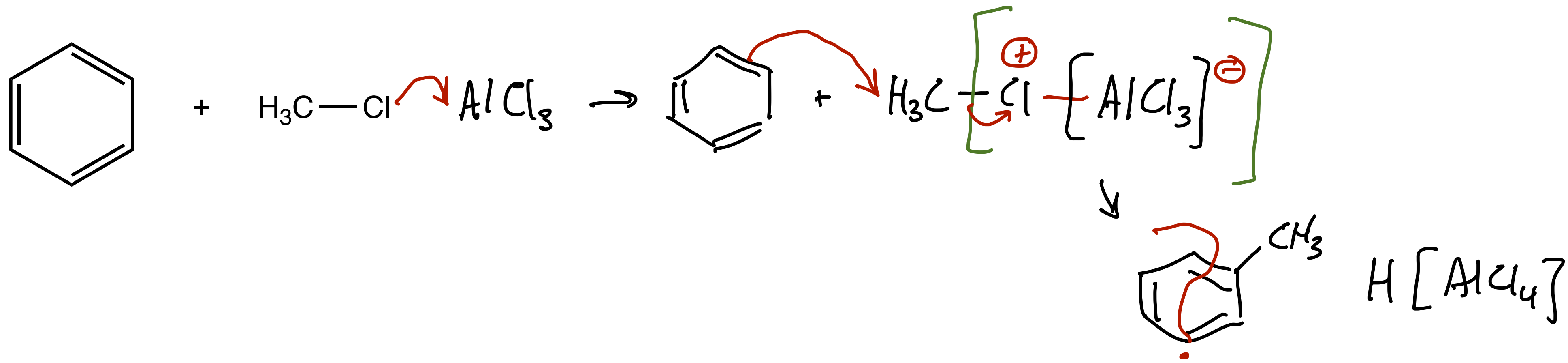




Alkylation and Acylation

Al is (2+) + 3 $Cl^{\ominus}$

Section 16.1 - 16.3



Fe^{3+} doesn't work ∴. How can we make a Lewis acid more Lewis acid. 4+ would be good, but not available.