Course Introduction

Electrophilic Aromatic Substitution (EAS)

1/18/2023

Syllabus & Course Resources

Syllabus link

"Living" course calendar link

Office hours (in Park 169): Wednesday, 11:00am-12:30pm
Friday, 11:00am-1:00pm not this week
or by appointment (email me)

TA hours: TBD (will be shared ASAP)

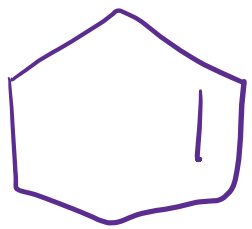
All of this is on Moodle!

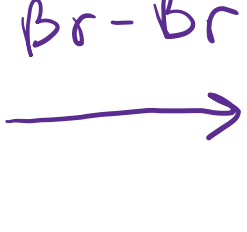
Tips for success

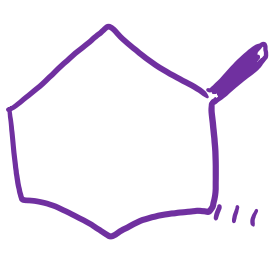
- Know how to do every assigned homework problem.
  - Unassigned problems are good extra practice (i.e. #54 is assigned, #55 is most likely helpful too).
  - “Second Language” textbook companion also has extra practice problems.
- Use all the resources at your disposal.
  - Office hours, TA’s, textbook, email/talk to me!
- Study with others.
- Practice consistently & effectively.
  - “Retrieval Practice” versus re-reading/reviewing
- Come to class prepared.
- Be active in class.

Electrophilic Aromatic Substitution (EAS)

Text: 18.1



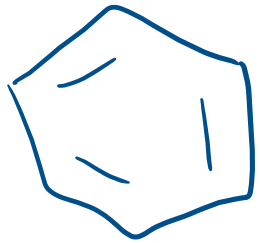




+ enantiomer

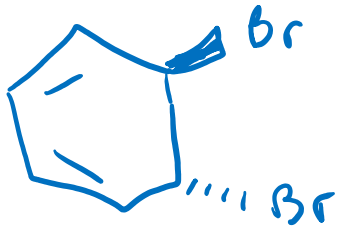
anti addition only

alkene addition (last semester)



aromatic very stable

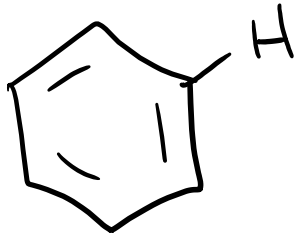
no reaction

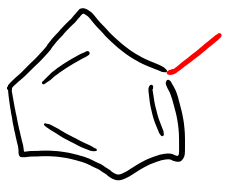


+ enant.

not observed!

breaks aromaticity! very uphill ΔG





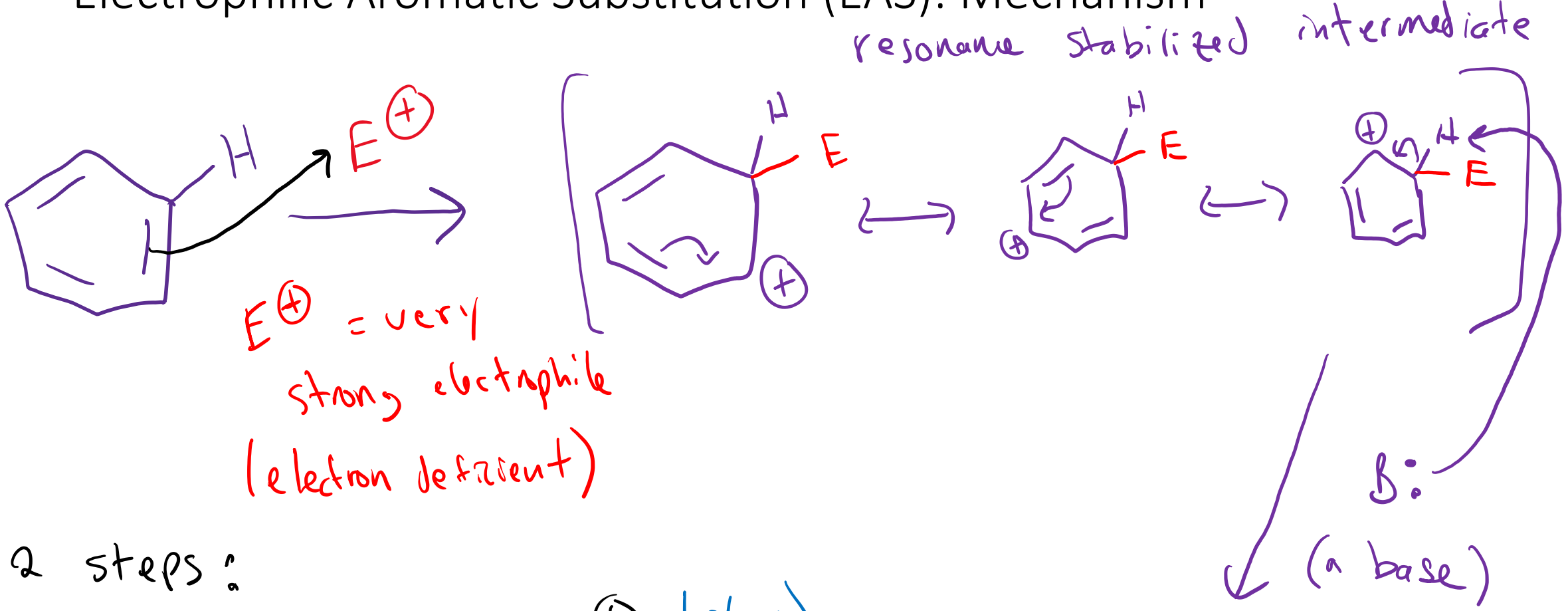
+ HBr

swapped H for Br

Electrophilic Aromatic Substitution (EAS)

Lewis Acid catalyst → activates Br_2

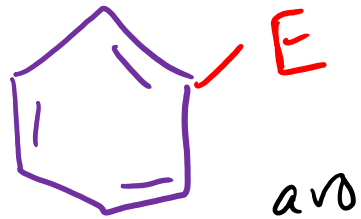
Electrophilic Aromatic Substitution (EAS): Mechanism



2 steps:

① nucleophilic attack on $E^{\oplus}$ (slow)

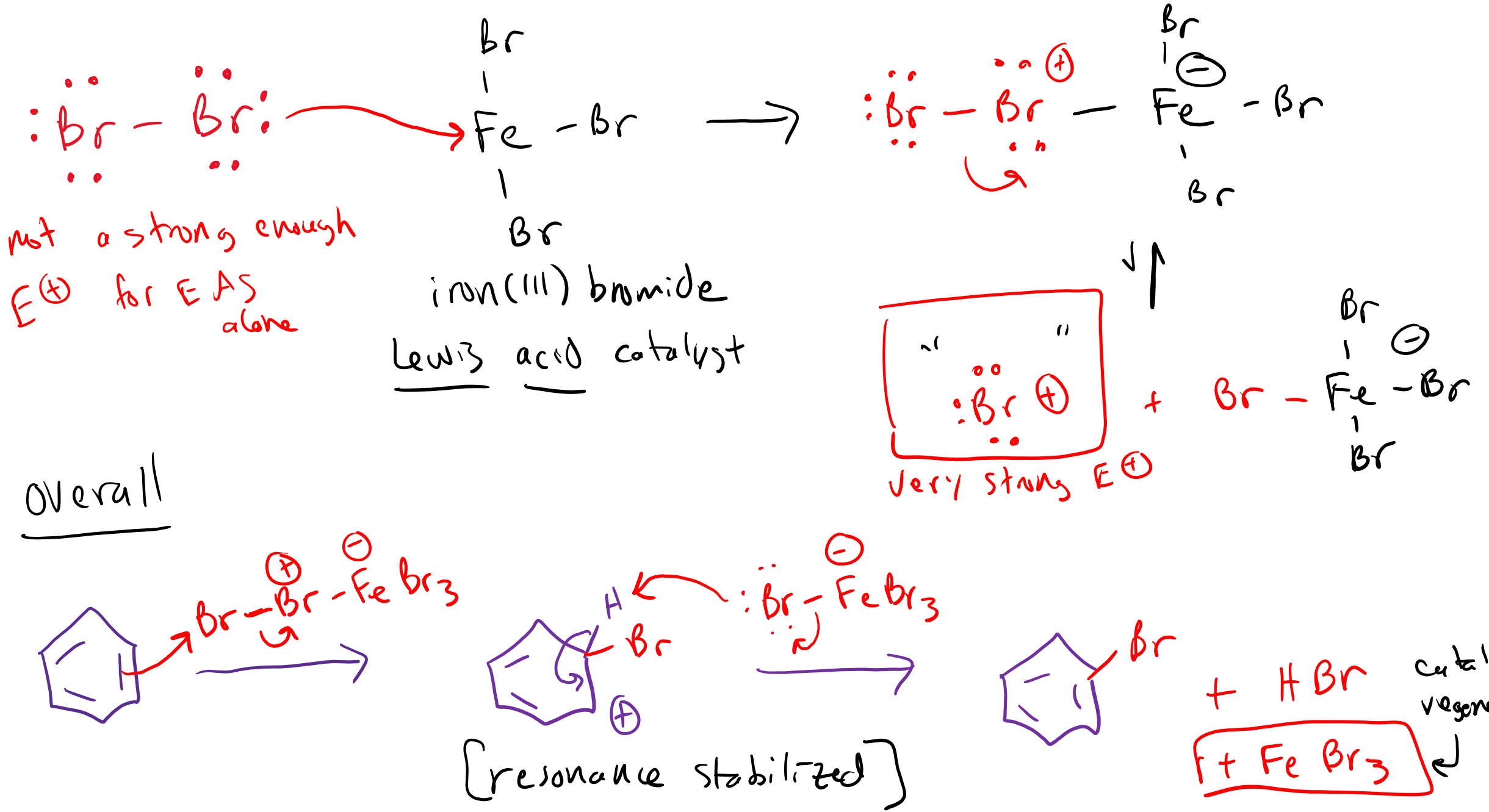
② deprotonation (a la E1) to restore aromaticity (fast)



aromaticity restored!

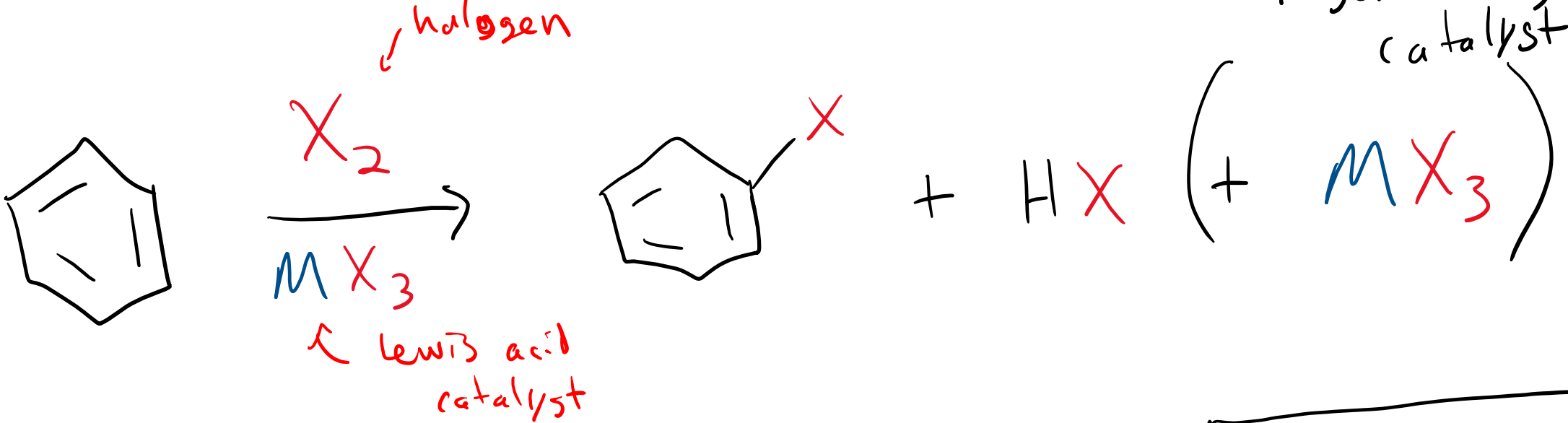
Halogenation of Benzene

Text: 18.2



Halogenation of Benzene

More generally:



X = Cl or Br not F or I !

M = Fe^{3+} or Al^{3+}

EAS always requires very strong electrophile (often must be generated in solution)