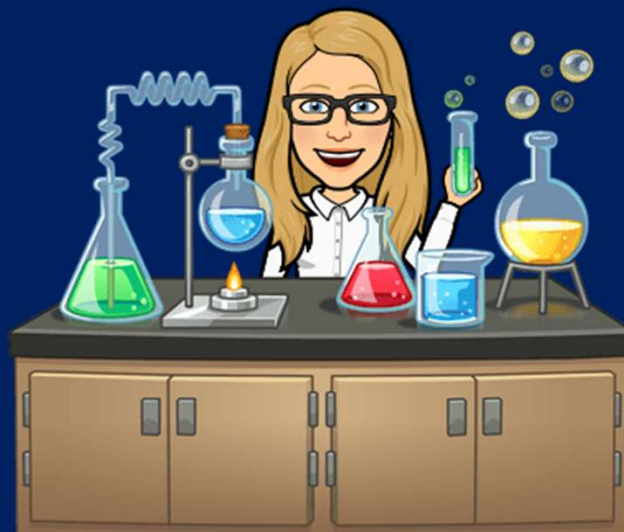


For clicker question voting, go to:
<https://pollev.com/lauriestarke263>



Dr. Laurie S. Starkey
Cal Poly Pomona

CHM 3150 Organic Chemistry II
Announcements 11/18/25

Today's Topic: Diazonium Salts & Synthesis (Chapters 22 & 18)

Daily To-Do

Flipped Lectures

Step 4

- Read Klein-Starkey Sections:

- 18.12 Aromatic Synthesis
- 22.10, 22.11 Diazonium Salts (textbook problems 22.26, 22.66)
- 17.6 Reactions at the Benzylic Position
- 18.13, 18.15 Nucleophilic Aromatic Substitution (textbook problems 18.30-18.32)

Aromatic Reactions - Part 3

53 minutes

skeleton notes pages 18-11 through 18-16

LOTS of sections to skim through!

- Work through SkillBuilders:

- 18.5 Synthesis of Disubstituted Rings
- 18.6 Synthesis of Polysubstituted Rings
- 18.4 Blocking Groups
- 17.4 Reactions of Benzylic Position
- 18.7 Determining Mech. of Ar Reaction

LOTS of SkillBuilders for practice!

- & Textbook problems 18.24, 18.25

- FYI (not on exam) Klein 21.6 Stork Enamine Synthesis, SkillBuilder 21.7

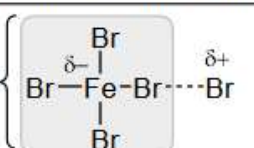
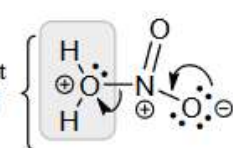

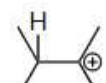
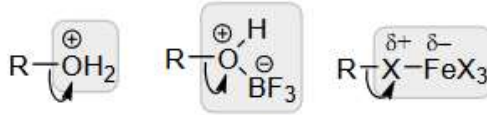

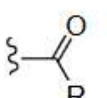
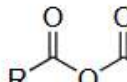
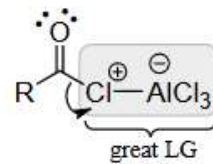
Ch. 17/18 (Step 4)

- ✓ Watch
- ✓ Read
- ✓ Practice

Aromatic Compounds: Reactions, Part 2 ▾		59:10
Intro		0:00
Reagents for Electrophilic Aromatic Substitution		0:07
Reagents for Electrophilic Aromatic Substitution		0:08
Preparation of Diazonium Salt		2:12
Preparation of Diazonium Salt		2:13
Reagents for Sandmeyer Reactions		4:14
Reagents for Sandmeyer Reactions		4:15
Apply Diazonium Salt in Synthesis		6:20
Example: Transform		6:21
Apply Diazonium Salt in Synthesis		9:14
Example: Synthesize Following Target Molecule from Benzene or Toluene		9:15
Apply Diazonium Salt in Synthesis		14:56
Example: Transform		14:57
Reactions of Aromatic Substituents		21:56
A) Reduction Reactions		21:57
Reactions of Aromatic Substituents	Diazonium Salts	23:24
B) Oxidations of Arenes		23:25
Benzylic [ox] Even Breaks C-C Bonds!		25:05
Benzylic Carbon Can't Be Quaternary	Rxns of Aromatic Substituents	25:55
Reactions of Aromatic Substituents		26:21
Example		26:22
Review of Benzoic Acid Synthesis		27:34
Via Hydrolysis		27:35
Via Grignard	Nucleophilic Ar. Substitution (S_NAr)	28:20
Reactions of Aromatic Substituents		29:15
C) Benzylic Halogenation		29:16
Radical Stabilities		31:55
N-bromosuccinimide (NBS)		32:23
Reactions of Aromatic Substituents		33:08
D) Benzylic Substitutions		33:09
Reactions of Aromatic Side Chains		37:08
Example: Transform		37:09
Nucleophilic Aromatic Substitution		43:13
Nucleophilic Aromatic Substitution		43:14
Nucleophilic Aromatic Substitution		47:08
Example		47:09
Mechanism		48:00
Nucleophilic Aromatic Substitution		50:43
Example		50:44

Flipped lecture: Ch. 18/22 Aromatic Rxns (Part 3 of 3)

Handout: Electrophiles for EAS

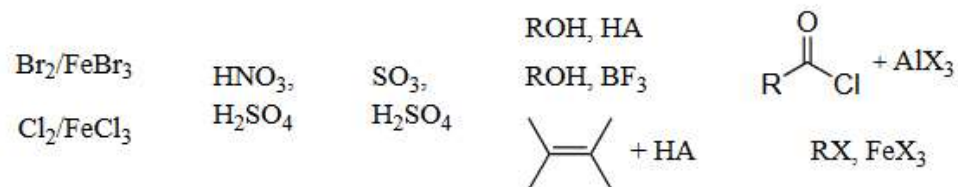
Klein	EAS Reaction	Conditions	Electrophile (E^+)	Mech. to make E^+ (first steps in EAS)
18.2	halogenation -X	$Br_2/FeBr_3$ $Cl_2/FeCl_3$	$Br-Br-FeBr_3 \approx Br^+$ $Cl-Cl-FeCl_3 \approx Cl^+$	great LG 
18.4	nitration -NO ₂	HNO_3 , H_2SO_4	$O=N=O^+$ (nitronium ion)	great LG  <i>loss of water LG to make NO_2^+</i>
18.3	sulfonation* -SO ₃ H	SO_3 , H_2SO_4	$O=S=O \leftrightarrow O=S^+(O^-)O^-$	N/A (SO ₃ is Electrophile) <i>*reaction is reversible (heat removes -SO₃H group)</i>
18.5	Friedel-Crafts alkylation -R	ROH/HA or ROH/BF_3 or RX/FeX_3 or  + HA (HF)	R^+  (carbocation - may rearrange, if unstable)	 <i>loss of leaving group (LG) to make carbocation</i>  <i>protonate pi bond to make carbocation</i>
18.6	Friedel-Crafts acylation 	$R-C(=O)Cl + AlCl_3$ or  + $AlCl_3$	$R-C^+=O \leftrightarrow R-C \equiv O^+$ (acylium ion)	 <i>great LG</i>

Handout: Diazonium Salts/Synthesis

Aromatic Substitution Reactions & Synthesis of Aromatic TM's

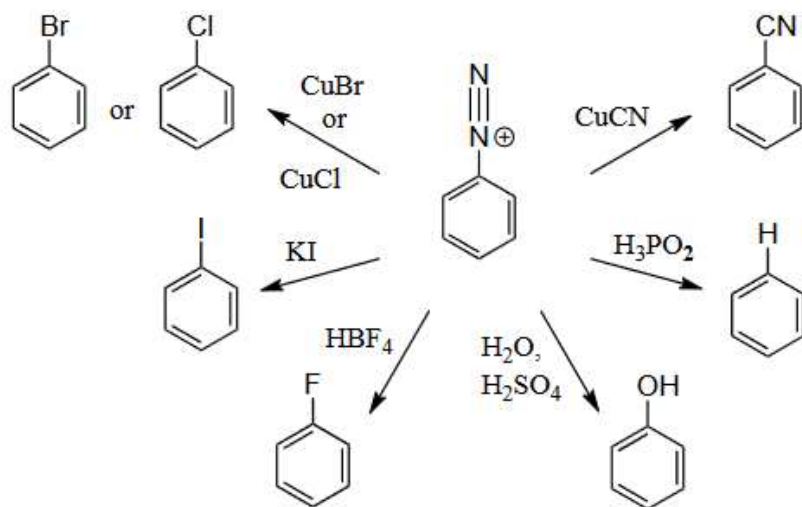
Reagents for Electrophilic Aromatic Substitution:

(Klein Sections 18.1-18.6, generate E^+)



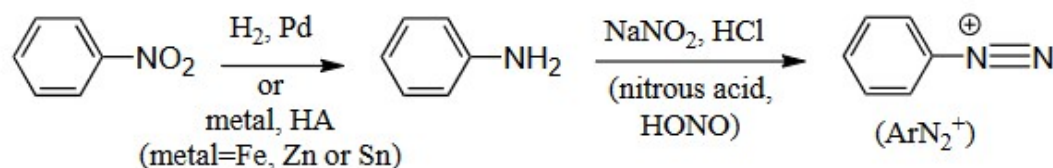
Reagents for Sandmeyer Reactions:

(Klein Section 22.11, react with ArN_2^+)



Reagents will be provided on Cover Page of Exam 3!

Preparation of Diazonium Salt (ArN_2^+):



Exam III Tuesday, 11/25 (Chapters 21 & 17/18)

65-minute written exam

- no Scantron, no lecture after

No notes, calculators, model kits allowed

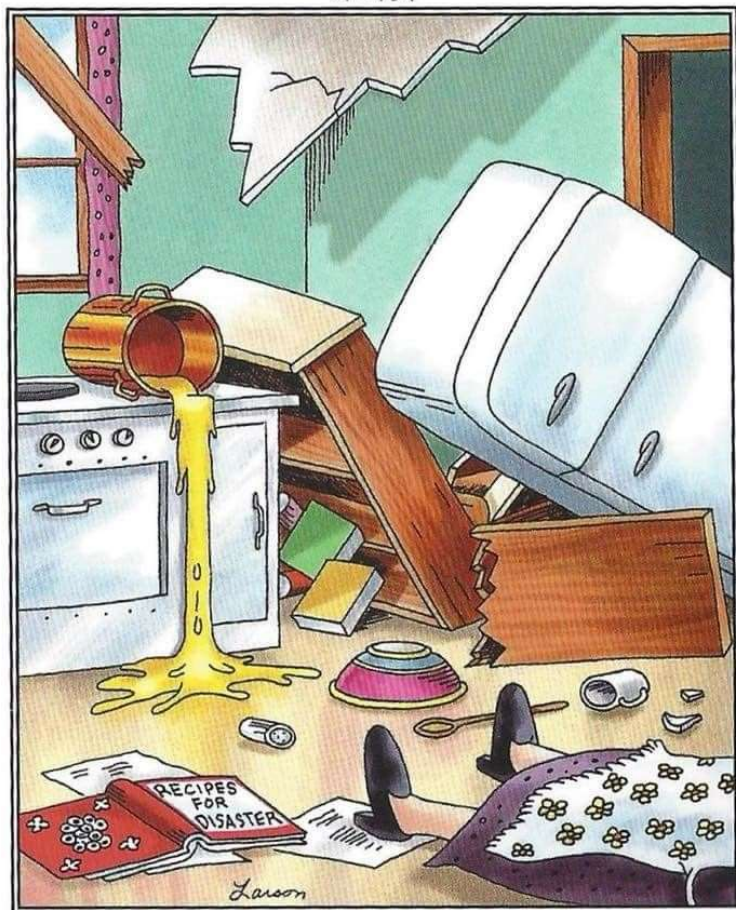
- Bring pencil(s), eraser

Sample exams on course homepage

- See typical length, format

**Extra office hour/
review session**
(Zoom, recorded)
Sun. 11/23, time TBD

6/20/94

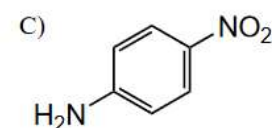
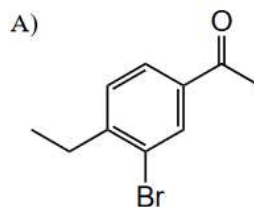


Synthesis requires careful planning!

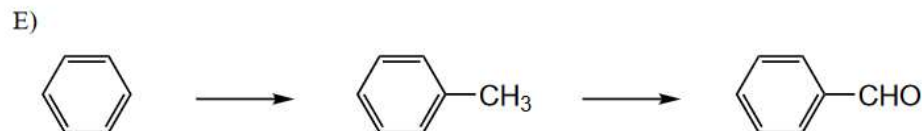
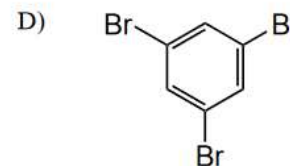
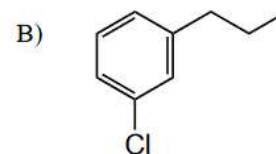
California State Polytechnic University, Pomona
Organic Chemistry CHM 316, Dr. Laurie S. Starkey

Aromatic Synthesis Practice Problems

A-D) Synthesize from benzene.



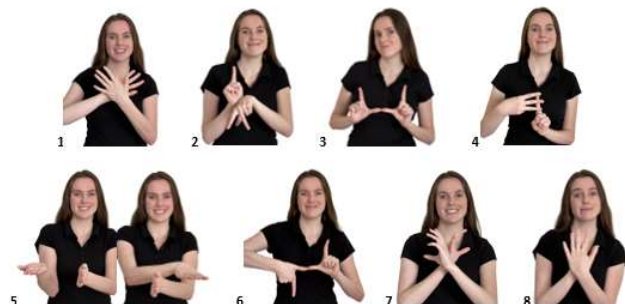
Synthesis
Worksheet
(& Answer Key)
on Course
Homepage



“Recipes for Disaster” - The Far Side, Gary Larson

Celebrating a former student as she continues her journey...congrats to Christina!

Christina shows Chemistry ASL in Chapter 5!



Former organic chemistry student and future Physician Assistant Christina Gloady is proficient in both the language of chemistry and American Sign Language (ASL).

