

Chem. 118B Workshop/Doug Kent/LSC: Functional Group Interconversions Of Benzene Derivatives From Chapter 16, Vollhardt & Schore, 5th Edition (Benzene = C₆H₅-H) (*Useful In Synthesis*)

Reactant	Reagents/Catalysts	Reaction Type	Product	Reverse Reaction
C ₆ H ₅ -COR (phenyl ketone)	H ₂ /Pd/ethanol or Zn(Hg)/HCl/Δ (Clemmensen Reduction)	Reduction	C ₆ H ₅ -CH ₂ R (Alkylbenzene)	to oxidize alkylbenzene to phenyl ketone, use CrO ₃ /H ₂ SO ₄ /H ₂ O
C ₆ H ₅ -NO ₂ (Nitrobenzene)	Zn(Hg)/HCl/Δ or H ₂ /Ni or Fe/HCl	Reduction	C ₆ H ₅ -NH ₂ (Aniline)	to oxidize aniline to nitrobenzene, use CF ₃ CO ₃ H
C ₆ H ₅ -NH ₂ (Aniline)	CH ₃ COCl/pyridine	Addition/ Elimination (118C)	C ₆ H ₅ -NHCOCH ₃ (an amide)	to convert amide to aniline use OH ⁻ / H ₂ O/Δ/ (amide hydrolysis in base; (118C)
C ₆ H ₅ -OH (Phenol)	CH ₃ I/NaOH (Williamson Ether Synthesis; 118A)	S _N 2	C ₆ H ₅ -OCH ₃ (Anisole)	to convert anisole to phenol use HI(conc)/Δ or HBr(conc)/Δ (acid cleavage of an ether; 118A)

