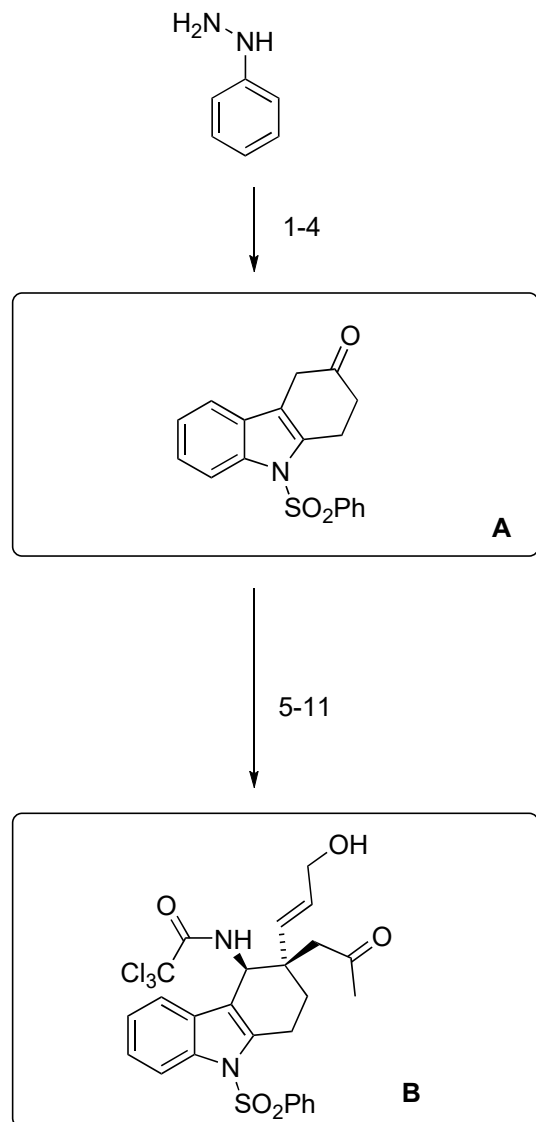
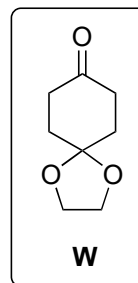


Enantioselective Total Synthesis of (+)-Flavisiamine F via Late-Stage Visible-Light-Induced Photochemical Cyclization

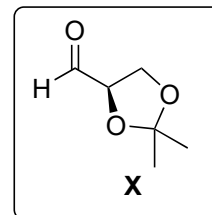
X. Tong, B. Shi, K. Liang, Q. Liu, C. Xia
Angew. Chem. Int. Ed. **2019**, *58*, 5443–5446.



- 1) **W**
- 2) ethylene glycol 190°C
- 3) NaOH, TBAHS, PhSO₂Cl
- 4) *p*-TsOH·H₂O



- 5) LHMDS, PhNTf₂
- 6) CrCl₂, NiCl₂, **X**
- 7) IBX
- 8) LiBHET₃
- 9) NaH, CCl₃CN
- 10) TMSOTf, DIPEA
- 11) K₂CO₃, PhCl, reflux, *then* 1N HCl



Name of step 1 and 2? Mechanism?

Fischer indole synthesis

Name three different general ways to access this class of compounds. What are the starting materials/conditions?

see below

Name of step 6? Mechanism?

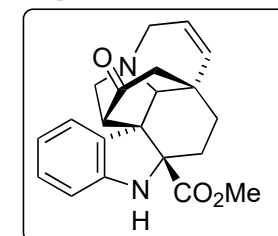
Nozaki-Hiyama-Kishi reaction

Name of step 9?

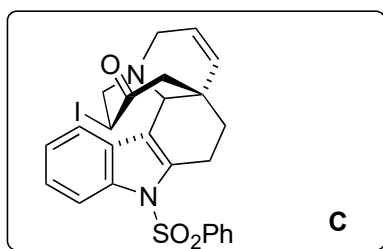
Overman rearrangement

Name of step 11?

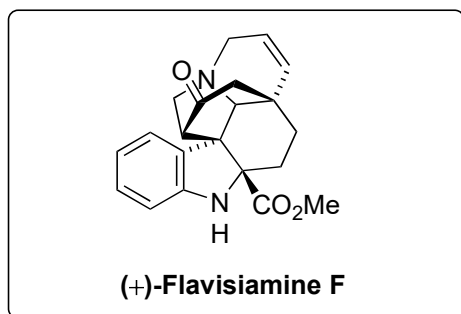
Claisen rearrangement



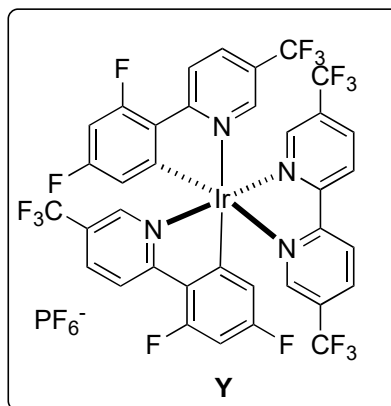
12-18



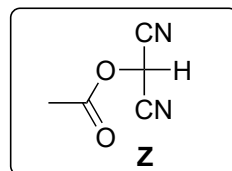
19-22



- 12) Ag_2O , MeI
- 13) KHMDS, TBSCl
- 14) DIBAL
- 15) K_2CO_3 , allyl bromide
- 16) aq. HCHO/EtOH , then 1N HCl
- 17) *p*-TsOH, Grubbs^{2nd} generation catalyst
- 18) LiHMDS, I_2



- 19) Et_3N , **Y** (5 mol%), air, blue LED, DMF
- 20) imH, **Z**
- 21) K_2CO_3 , H_2O_2
- 22) HCl, MeOH, reflux



Name of step 16) Mannich reaction

Structure of Grubbs^{2nd} generation catalyst?



Grubbs^{2nd} catalyst

