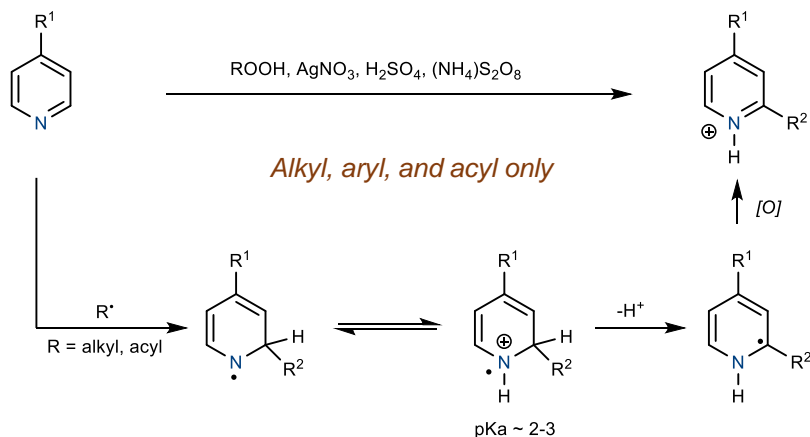


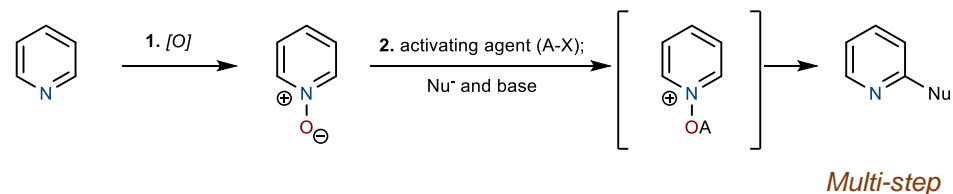
Classical Methods:

Minisci:

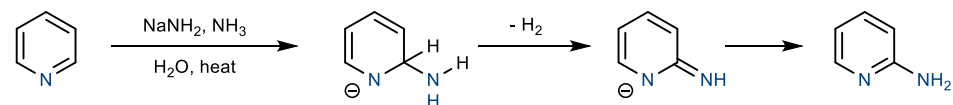


HERETOCYCLES **1989**, 28 (1), 489. <https://doi.org/10.3987/REV-88-SR1>.

Activated N-Oxides:

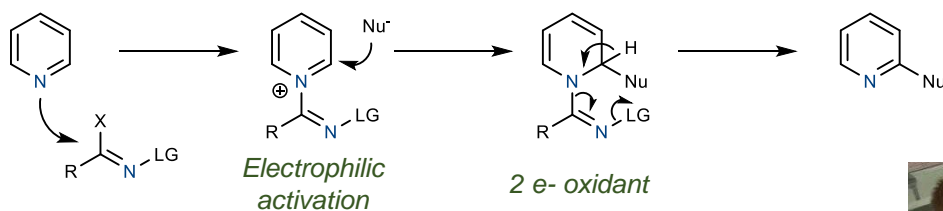


Chichibabin:

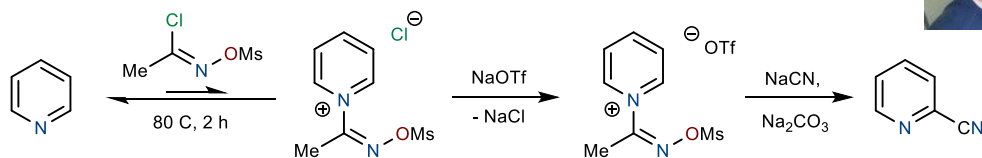


J. Russ. Phys. Chem. Soc. **1914**, 46, 1216.

Proposal:



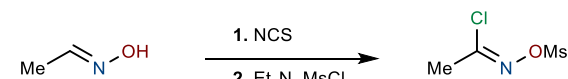
Optimization:



Salt metathesis overcomes unfavorable thermodynamics

Fier:

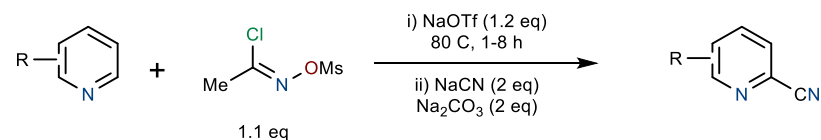
Reagent Preparation:



Acetaldehyde Oxime
\$0.10/mmol

Pure after aqueous workup
Crystalline, bench stable
Total cost \$0.15/mmol

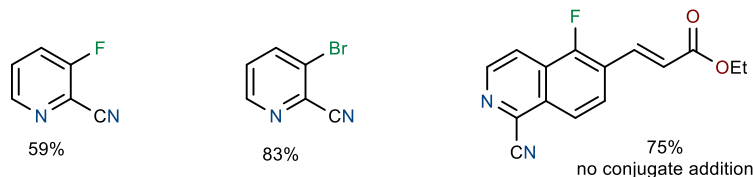
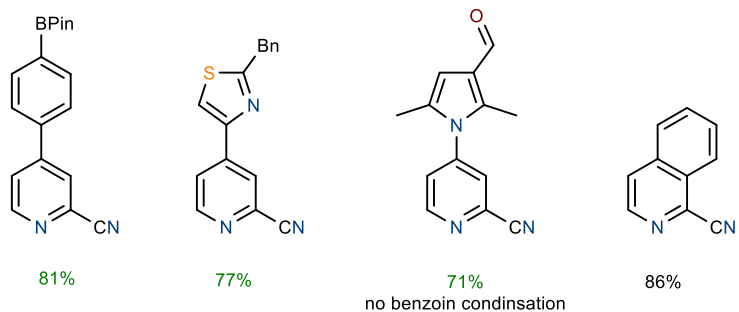
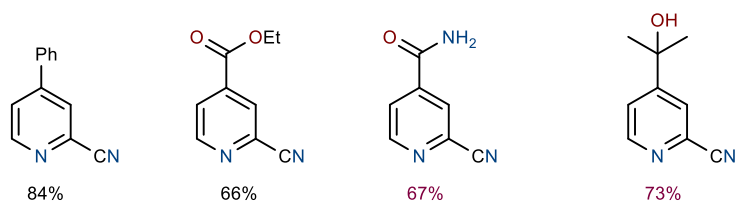
Standard Conditions:



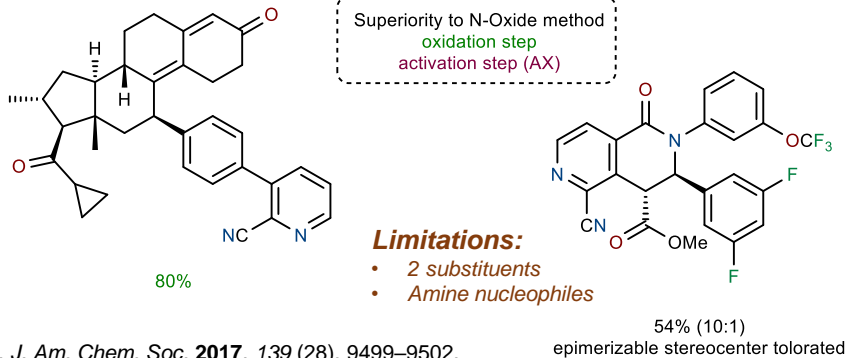
J. Am. Chem. Soc. **2017**, 139 (28), 9499–9502. <https://doi.org/10.1021/jacs.7b05414>.



Selected Substrates:



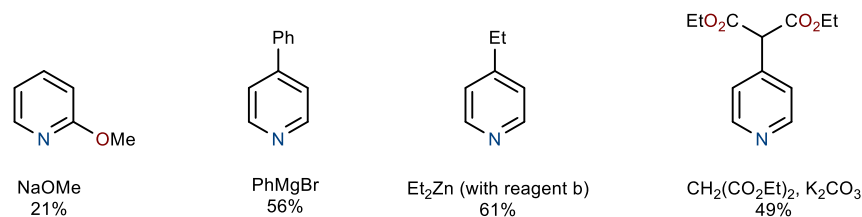
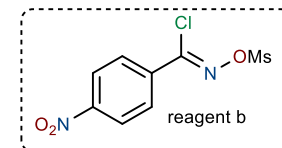
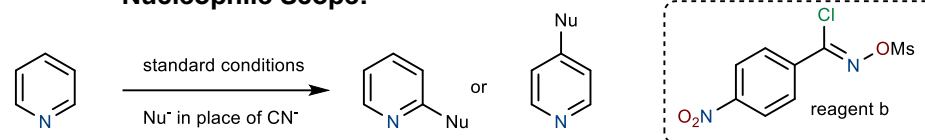
Superiority to N-Oxide method
oxidation step
activation step (AX)



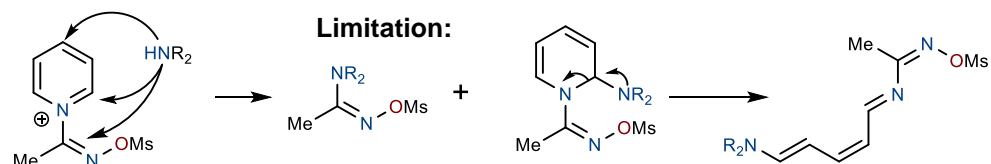
Limitations:

- 2 substituents
- Amine nucleophiles

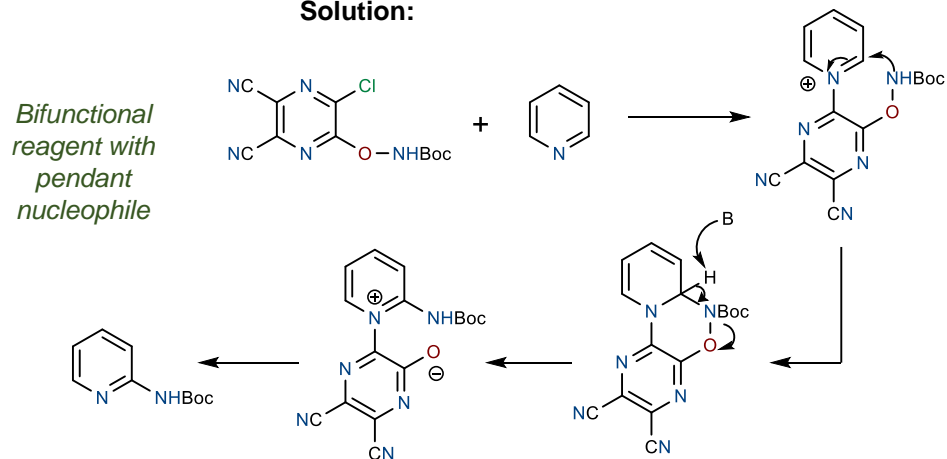
Nucleophile Scope:



J. Am. Chem. Soc. **2017**, *139* (28), 9499–9502. <https://doi.org/10.1021/jacs.7b05414>.

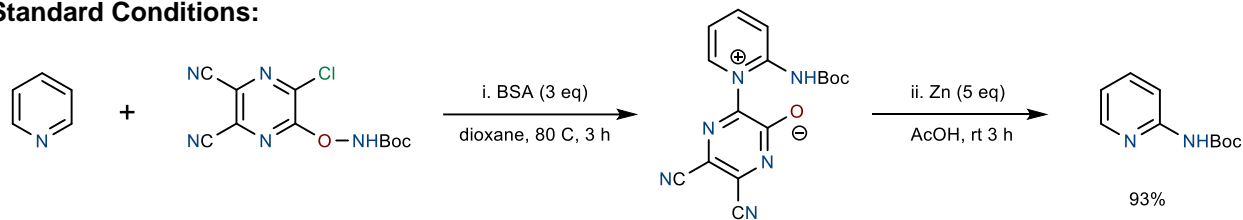


Solution:

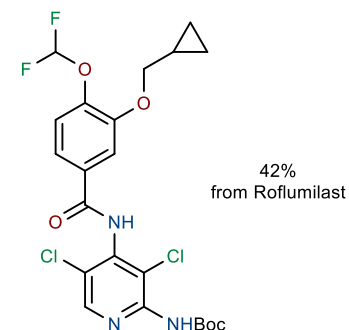


J. Am. Chem. Soc. **2020**, *142* (19), 8614–8618. <https://doi.org/10.1021/jacs.0c03537>.

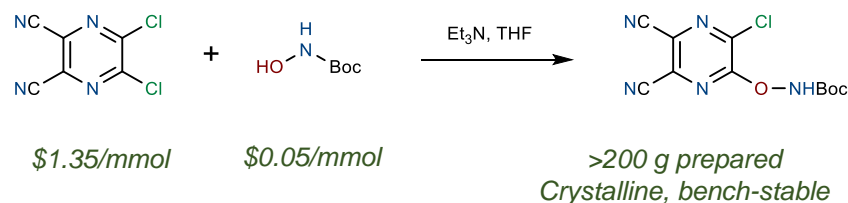
Standard Conditions:



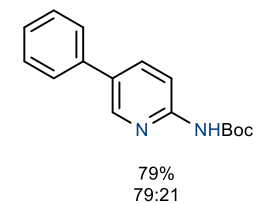
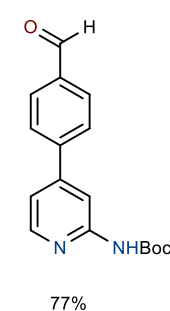
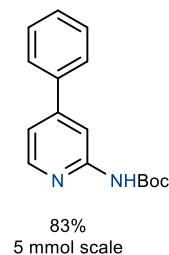
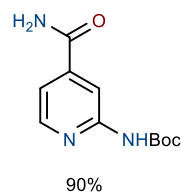
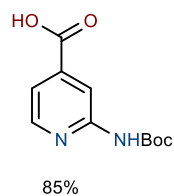
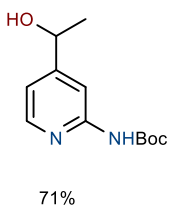
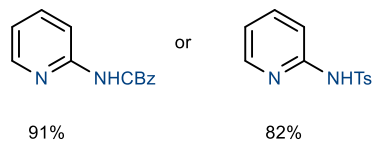
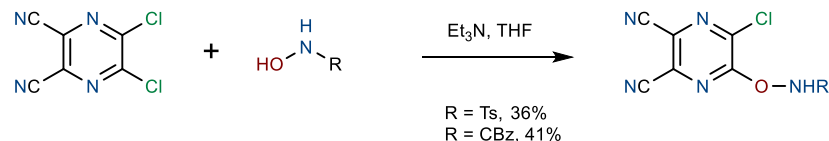
Substrate Scope:



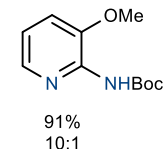
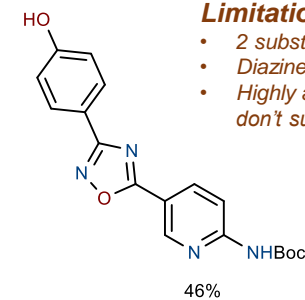
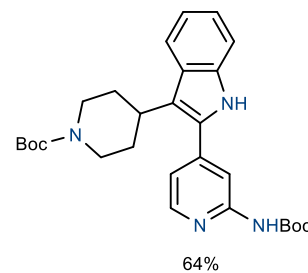
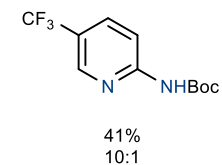
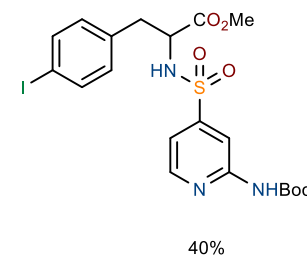
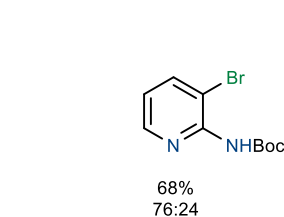
Reagent Preparation:



Alternative Protecting Groups:



J. Am. Chem. Soc. **2020**, *142* (19), 8614–8618. <https://doi.org/10.1021/jacs.0c03537>.



Limitations:

- 2 substituents
- Diazines
- Highly activated carbonyls don't survive Zn reduction