

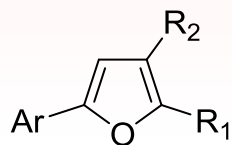
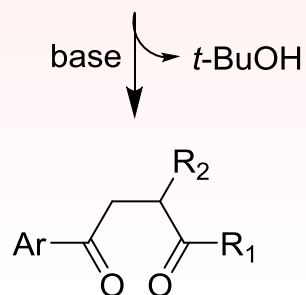
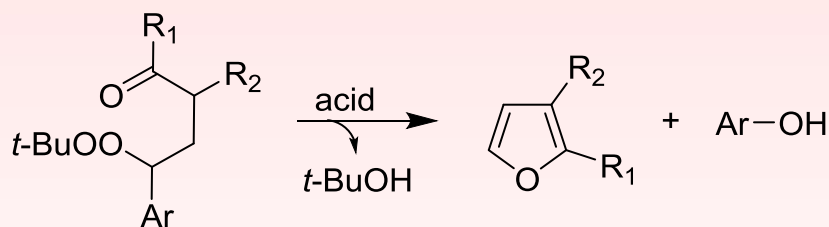
Palladium-Catalyzed Condensation of *N*-Aryl Imines and Alkynylbenziodoxolones to Form Multisubstituted Furans

Beili Lu, Junliang Wu, and Naohiko Yoshikai
Nanyang Technological University
Singapore

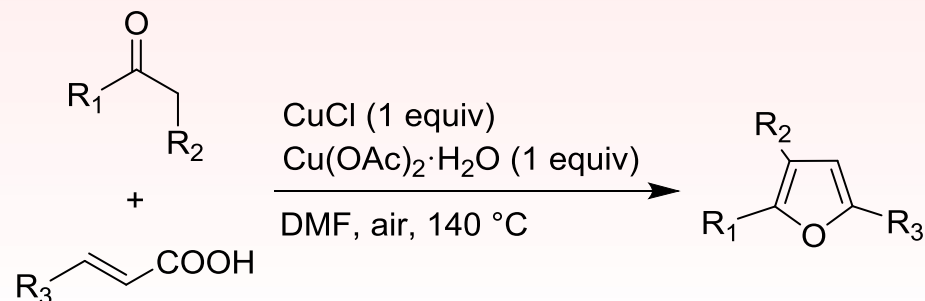
J. Am. Chem. Soc. **2014**, *136*, 11598.

Joseph Salamoun
Current Lit. 9/6/14
Wipf Group

Selection of Recent Methodologies for the Synthesis of Multisubstituted Furans

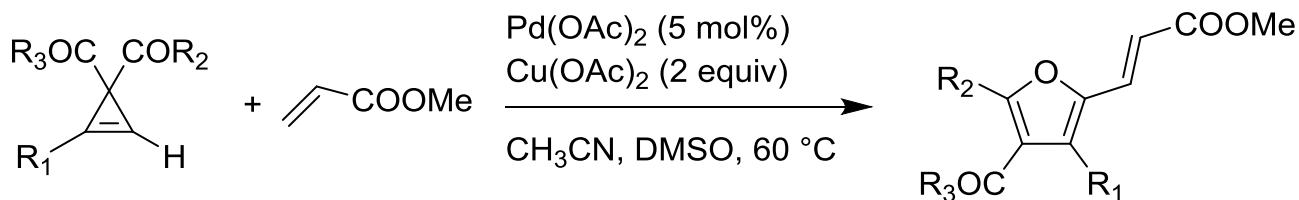


Org. Lett. **2013**, *15*, 5432.



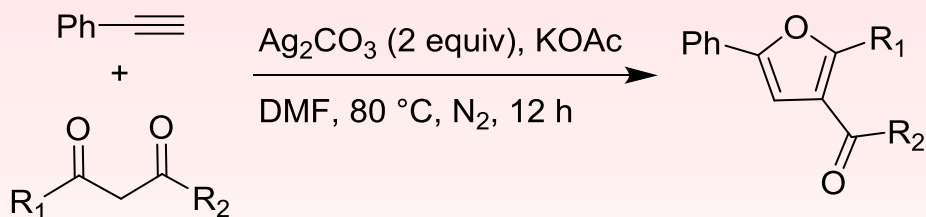
R_1 = aryl, heteroaryl, $t\text{-Bu}$
 R_2 = H, Me, Et, $n\text{-Bu}$, Ph
 R_3 = aryl, heteroaryl, styryl

Org. Lett. **2013**, *15*, 3206.



Chem. Eur. J. **2013**, *19*, 3584.

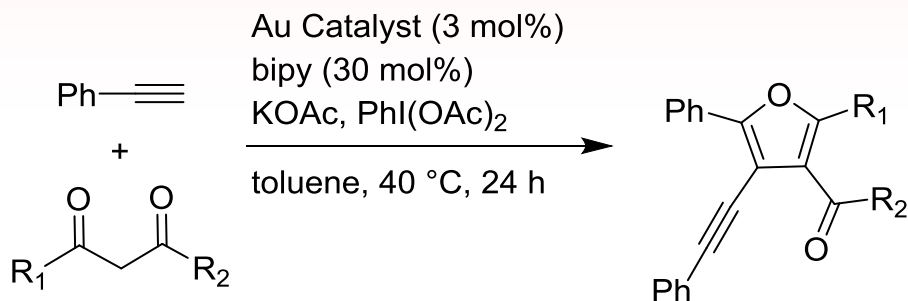
Selection of Recent Methodologies for the Synthesis of Multisubstituted Furans



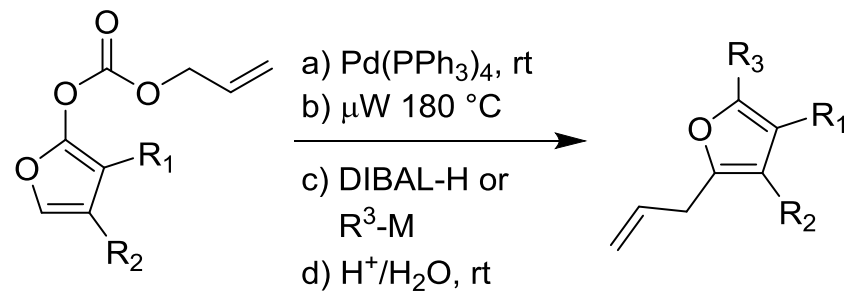
J. Am. Chem. Soc. **2012**, *134*, 5766.



J. Am. Chem. Soc. **2012**, *134*, 19981.

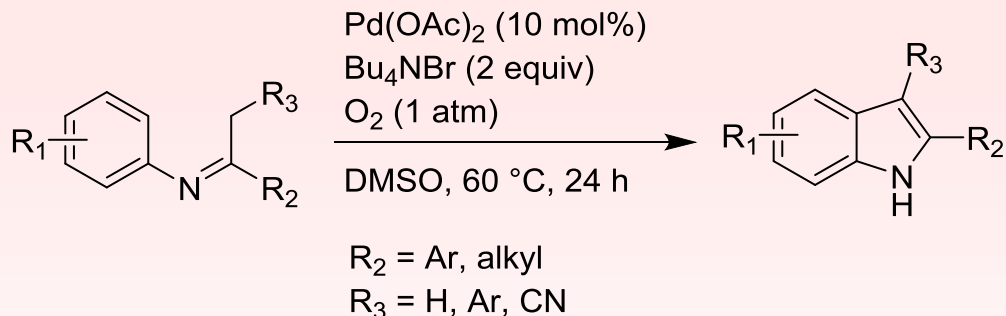


Angew. Chem. Int. Ed. **2014**, *53*, 7870.

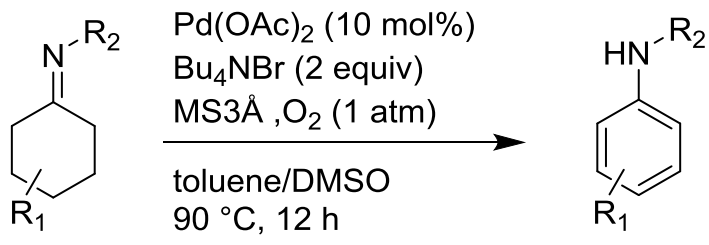


Angew. Chem. Int. Ed. **2012**, *51*, 7562.

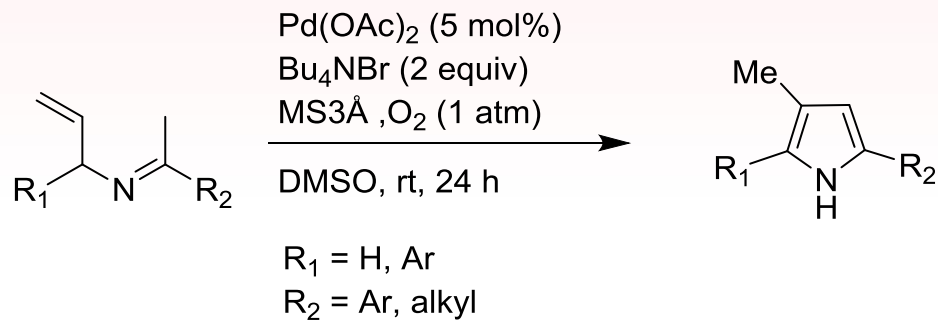
Previous Work from the Yoshikai Group



J. Am. Chem. Soc. **2012**, *134*, 9098.



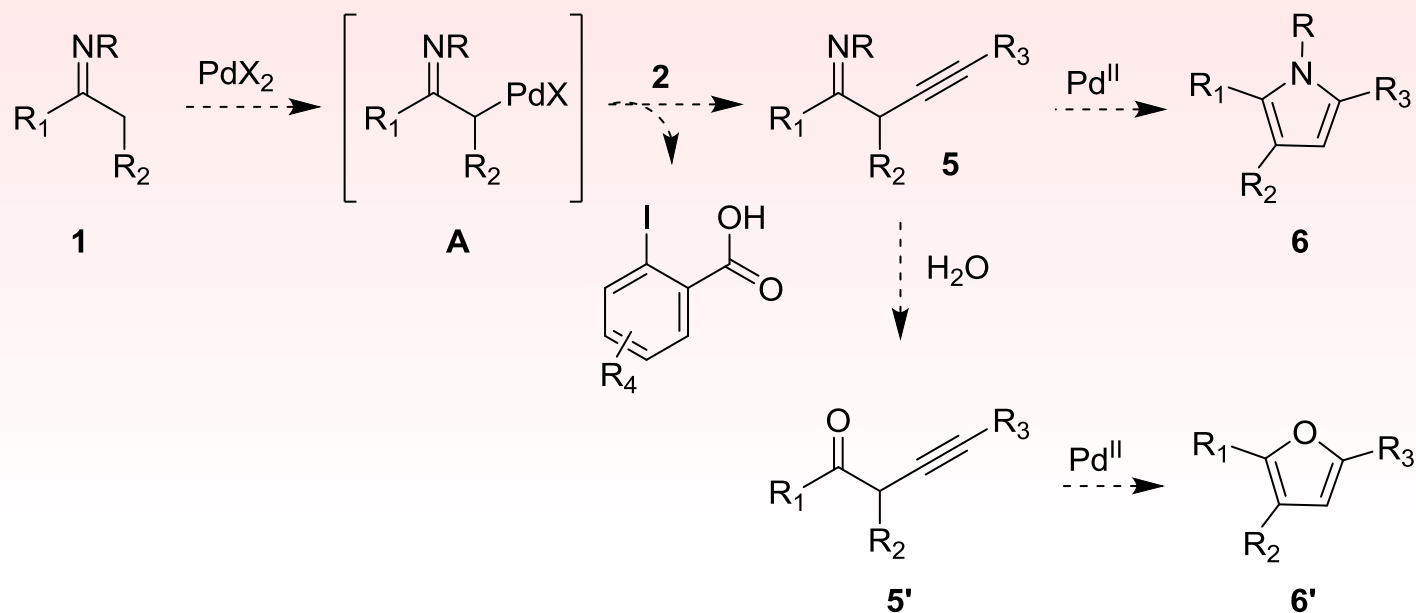
$\text{R}_1 = \text{H, alkyl}$
 $\text{R}_2 = \text{Ph with EWG or EDG, alkyl}$



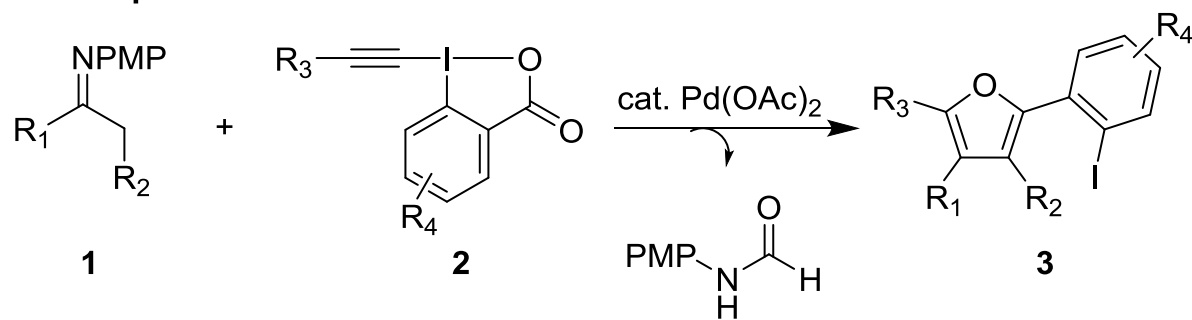
Org. Lett. **2013**, *15*, 1966.

Pd(II)-Catalyzed Coupling of Imine and Alkynylbenziodoxolone

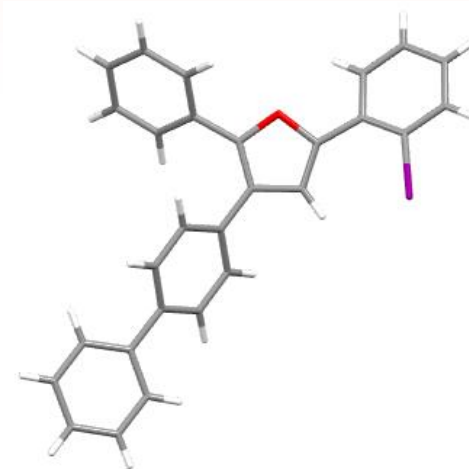
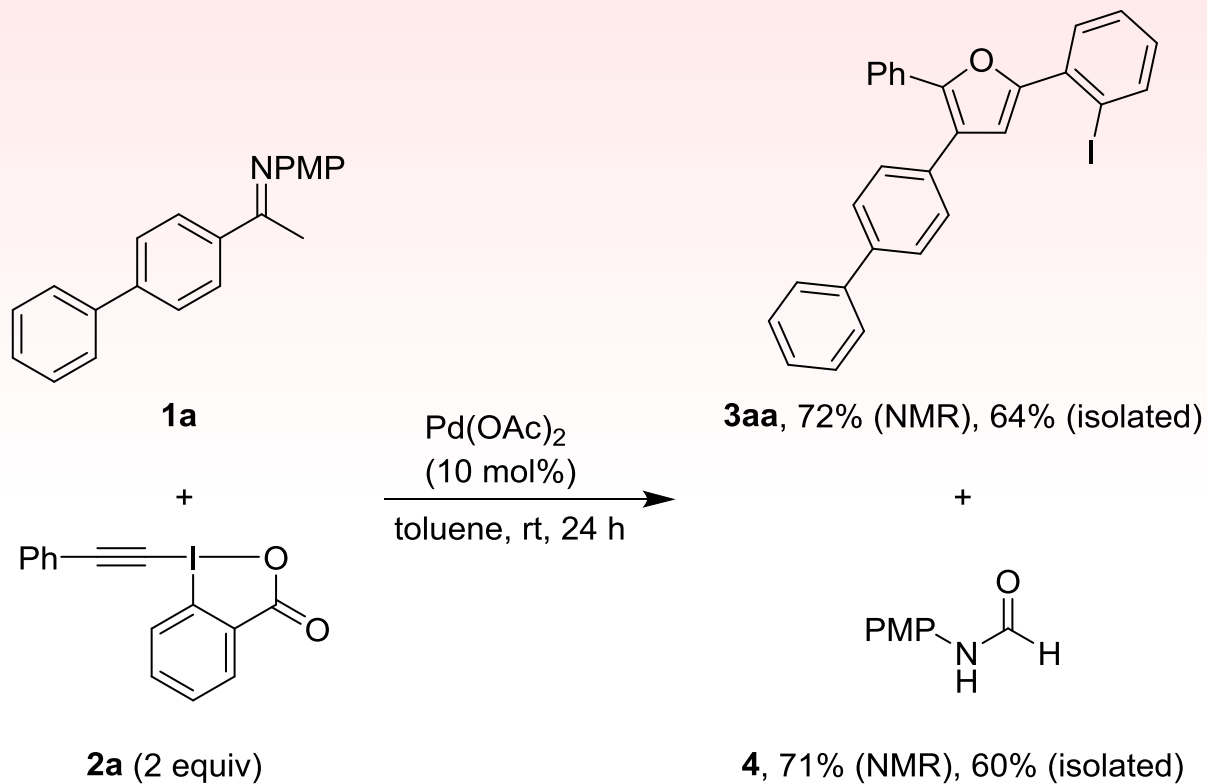
Initial Expectation based on Previous Work



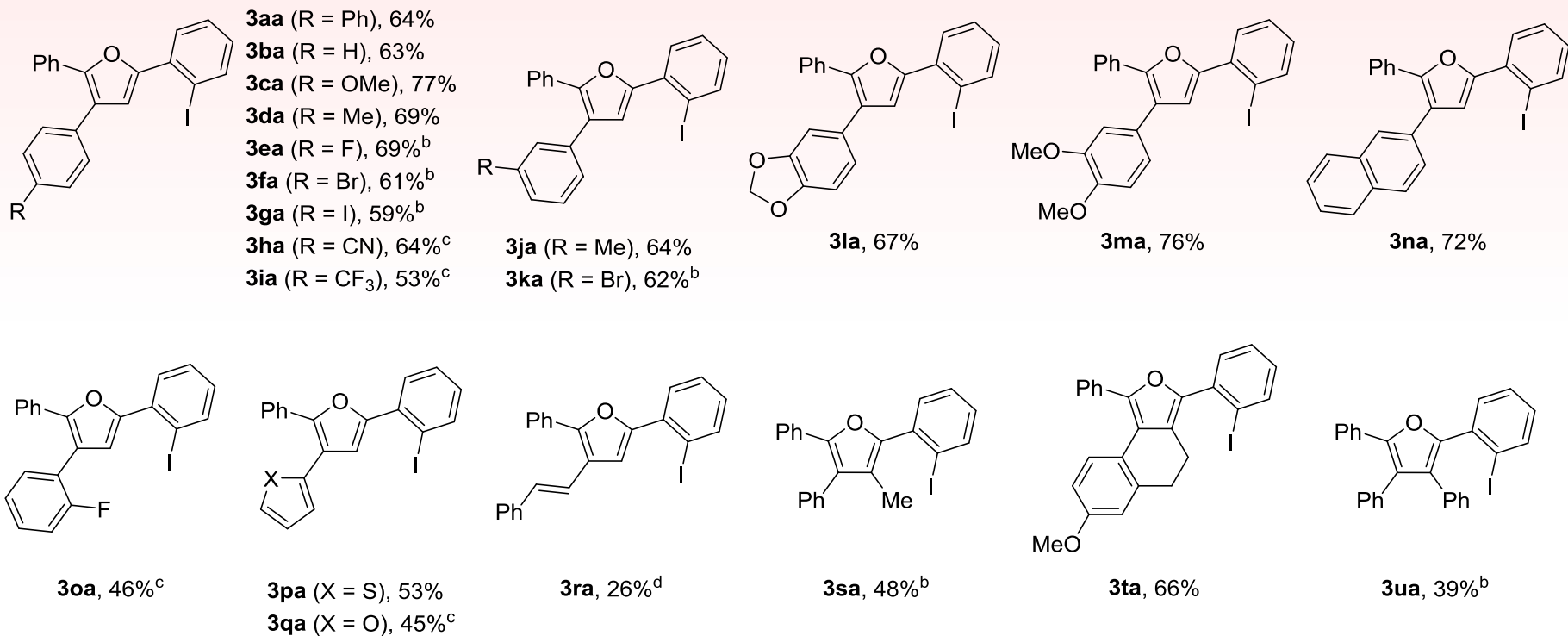
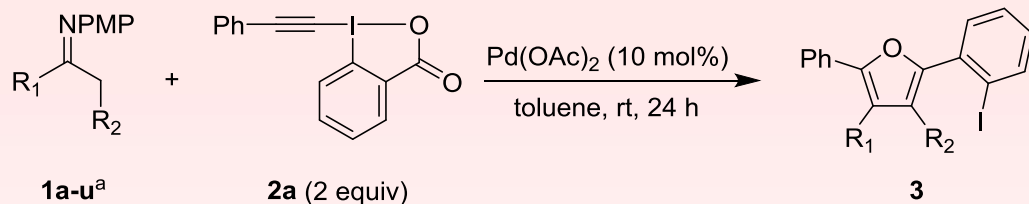
Title Paper



Initial Result

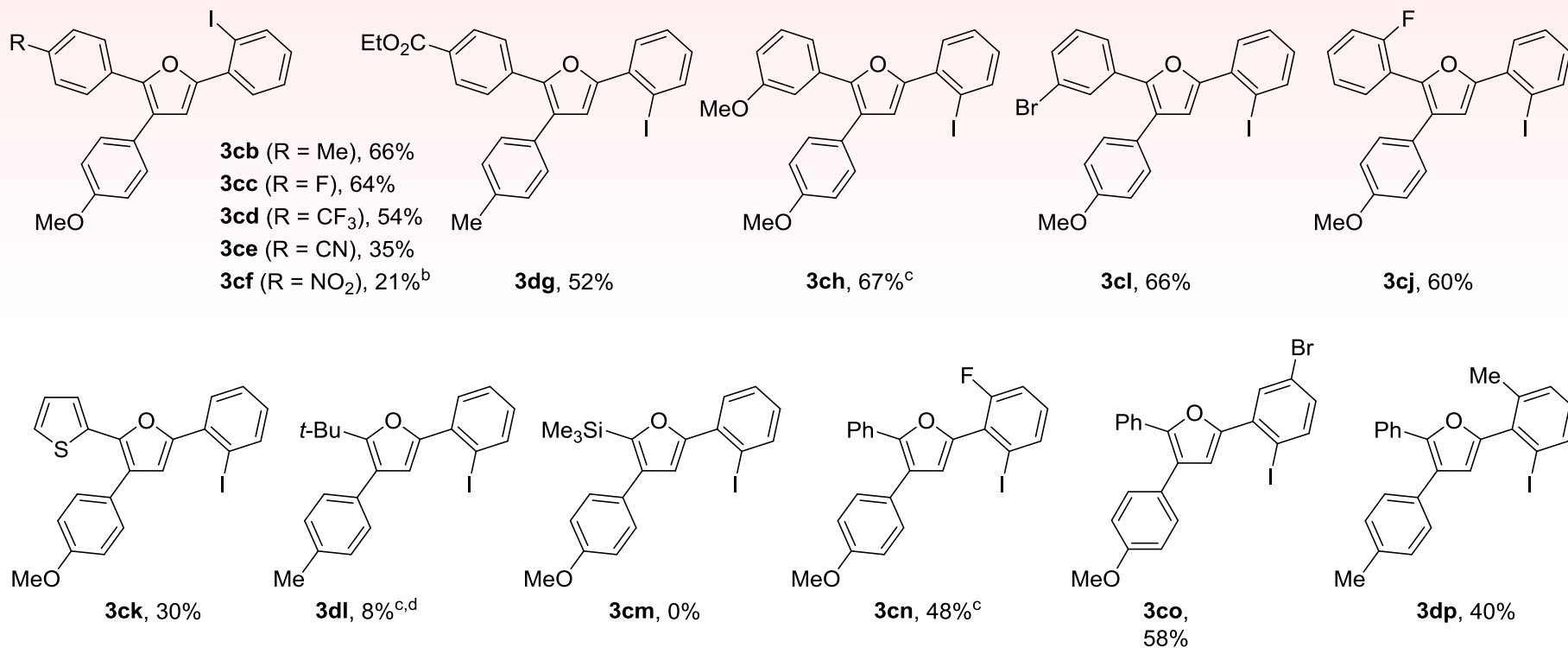
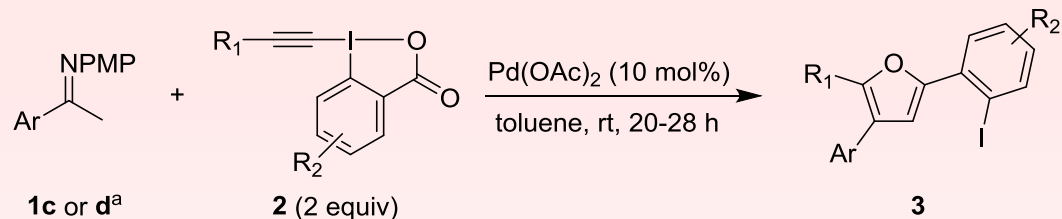


Scope of Imines



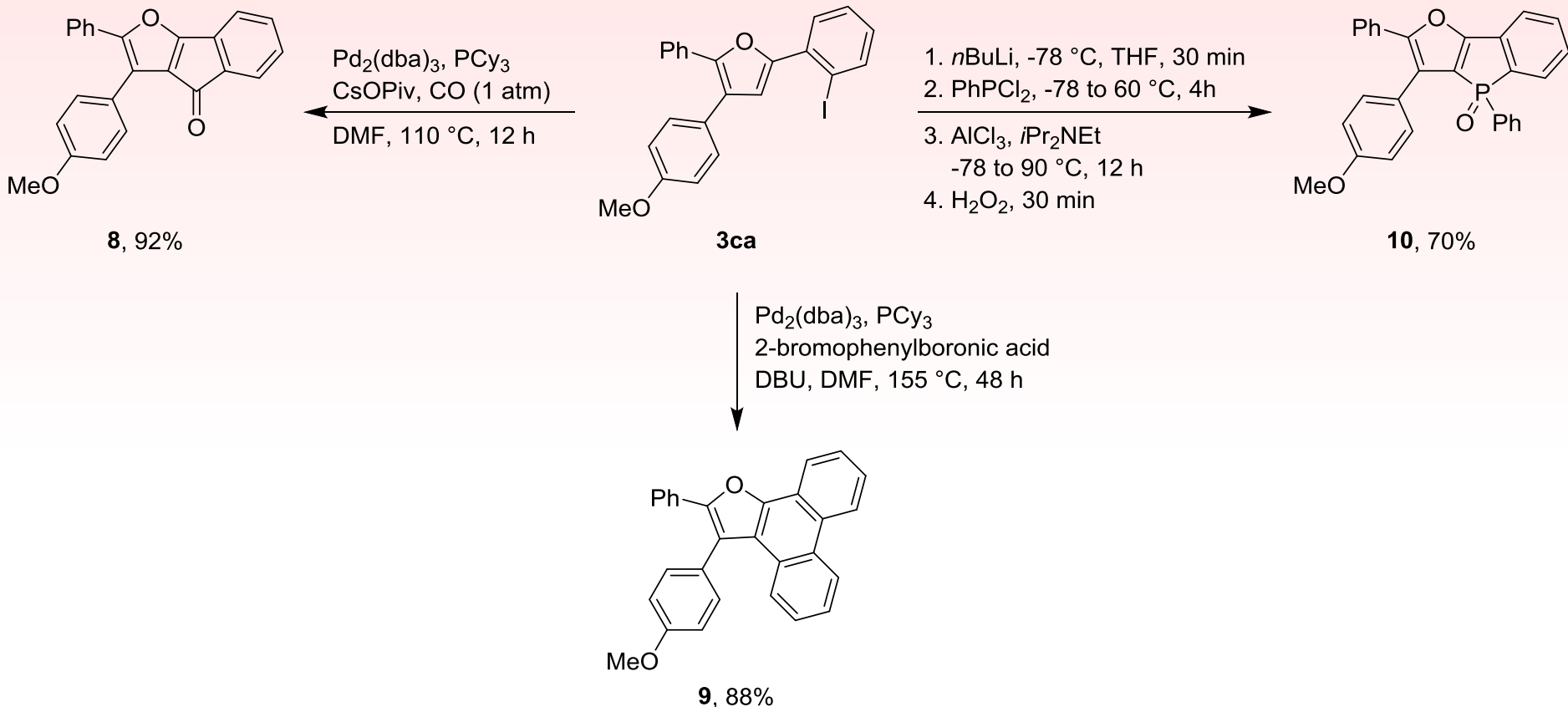
^a0.2 mmol scale. ^bReaction time was 48 h. ^cReaction at 40 °C for 20 h. ^dReaction at 70 °C for 24 h.

Scope of EBX

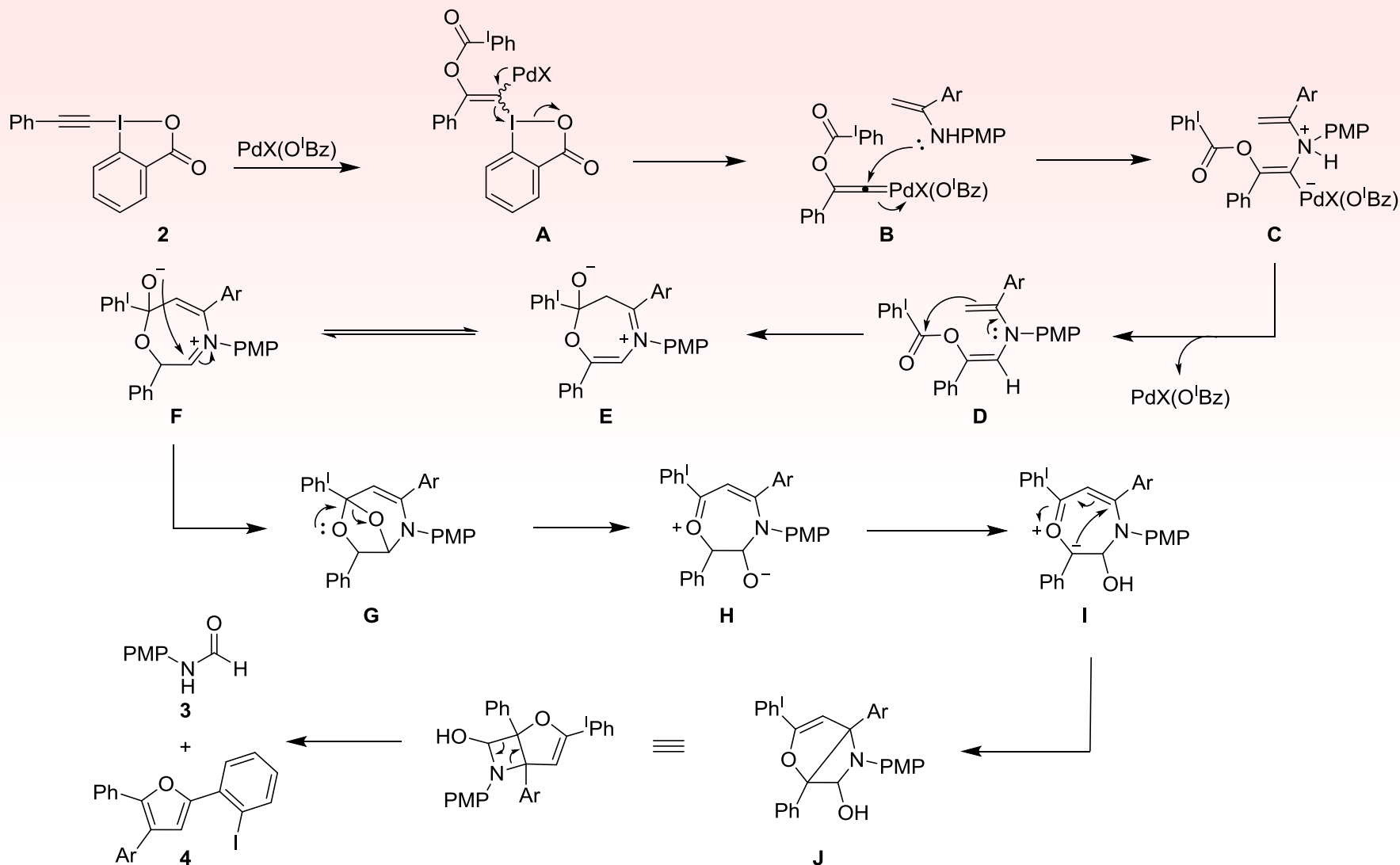


^a0.2 mmol scale. ^bReaction at 40 °C for 20 h. ^cReaction time was 48 h. ^dCH₂Cl₂ was the solvent.

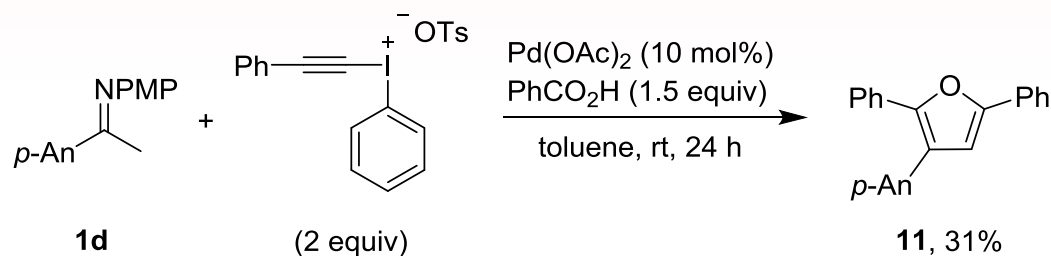
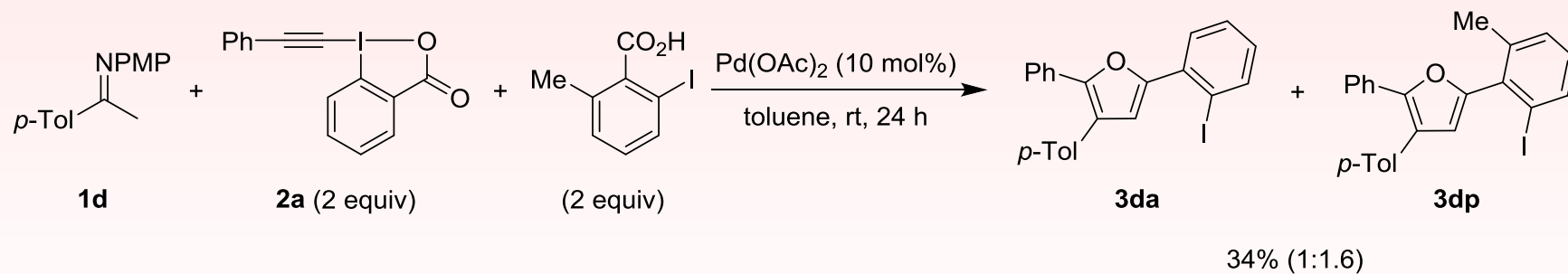
Transformations of Furan 3ca



“Highly Speculative” Mechanism



Three Component Reaction



Conclusions

- Valuable addition to the synthesis of multisubstituted furans.
- Limited C(2) substitution to iodo-benzene from EBX. But the aryl iodide provides a handle for additional transformations. Three component reaction can address this limitation.
- Some limitation to aryl substitutions (vs. alkyl).
- Additional mechanistic studies needed.