Generation of Arynes Triggered by Carbon–Carbon Bond Cleavage Reaction

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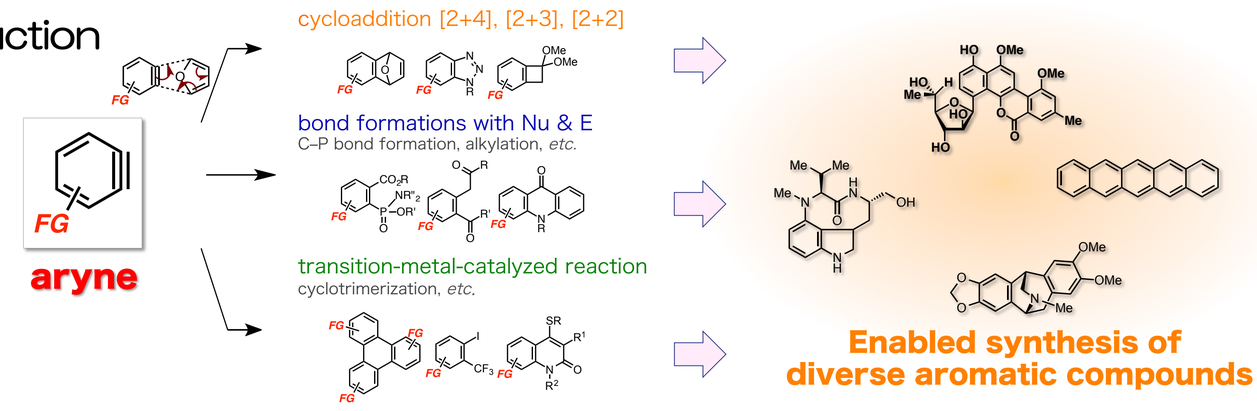
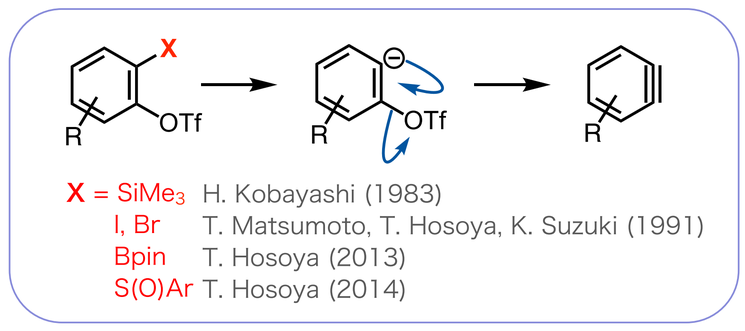
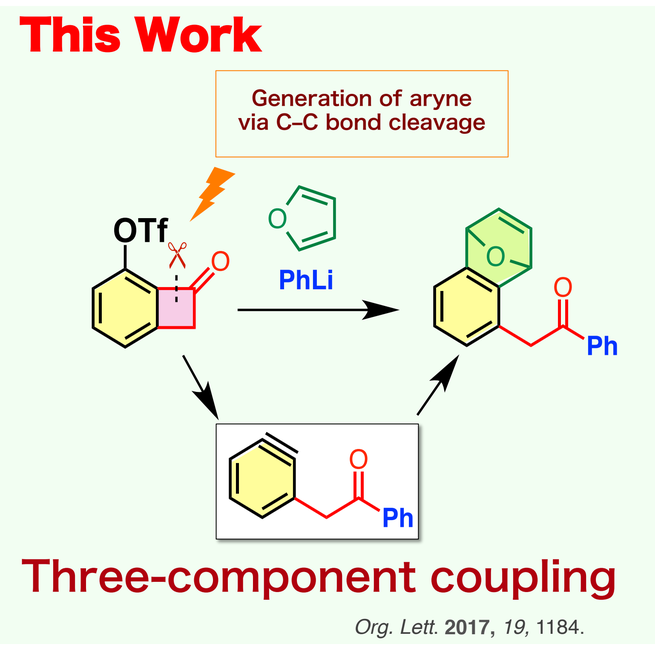
Introduction



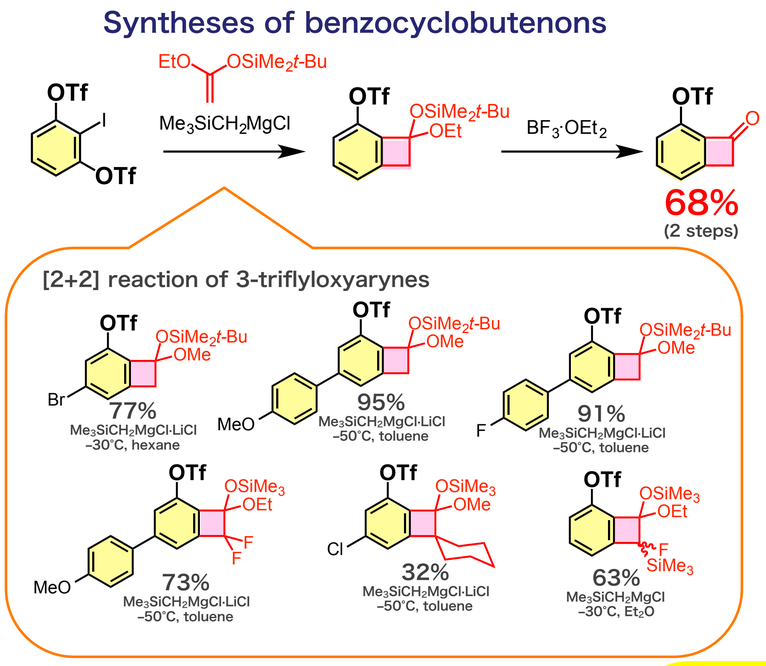


This Work

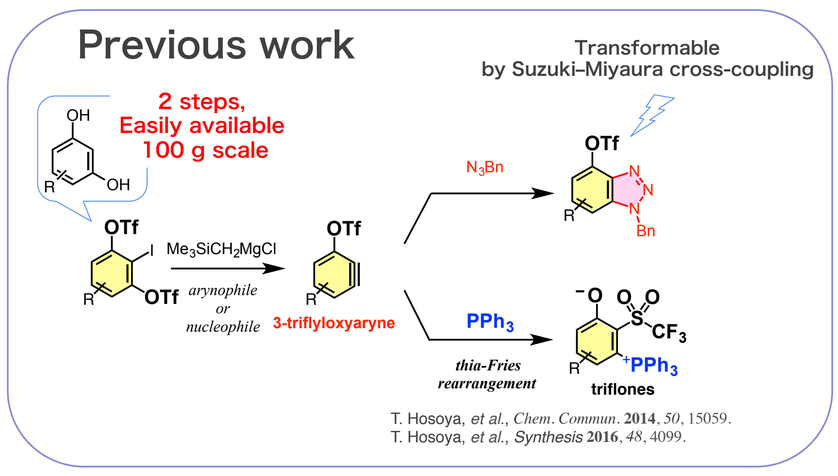


Org. Lett. **2017**, *19*, 1184.

Syntheses of benzocyclobutenons

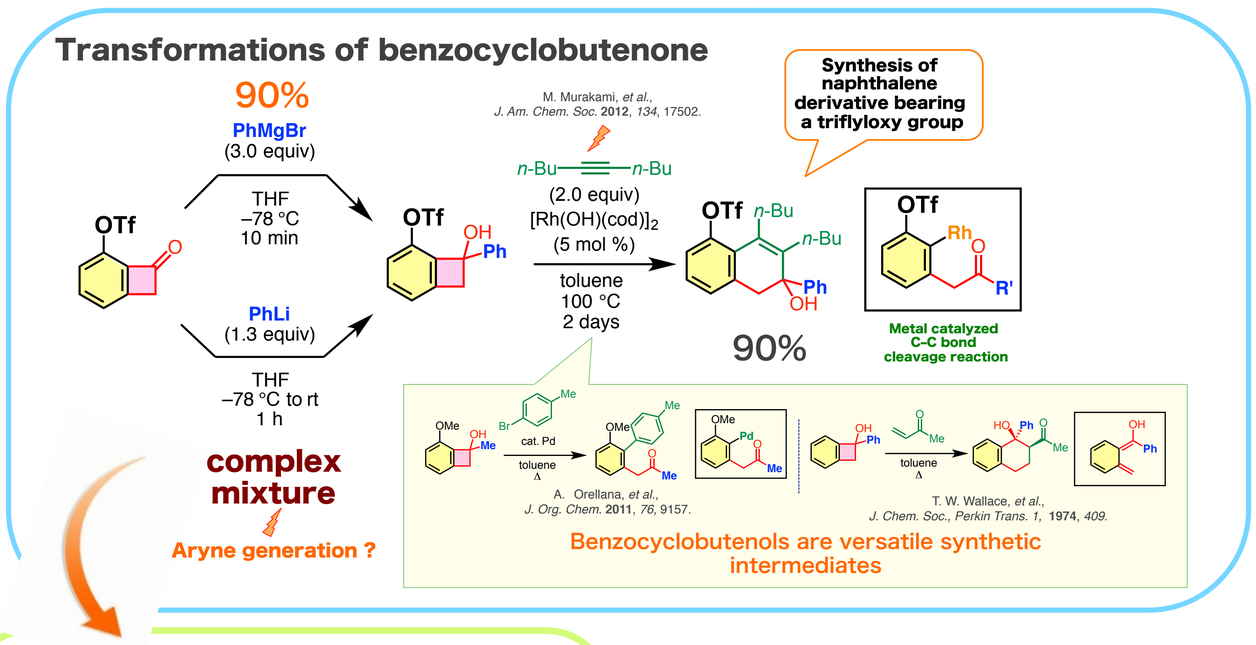


Previous work

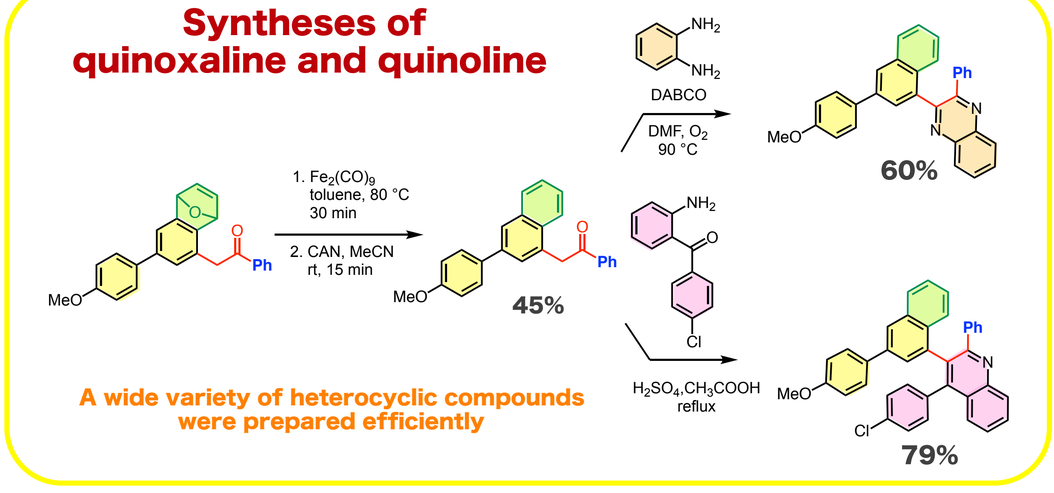


T. Hosoya, *et al.*, *Chem. Commun.* **2014**, *50*, 15059.
T. Hosoya, *et al.*, *Synthesis* **2016**, *48*, 4099.

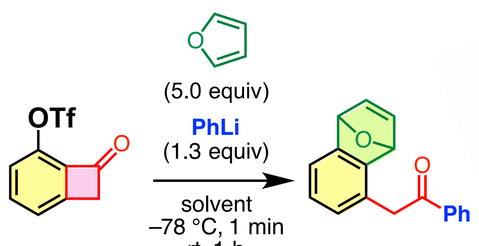
Transformations of benzocyclobutenone



Syntheses of quinoxaline and quinoline

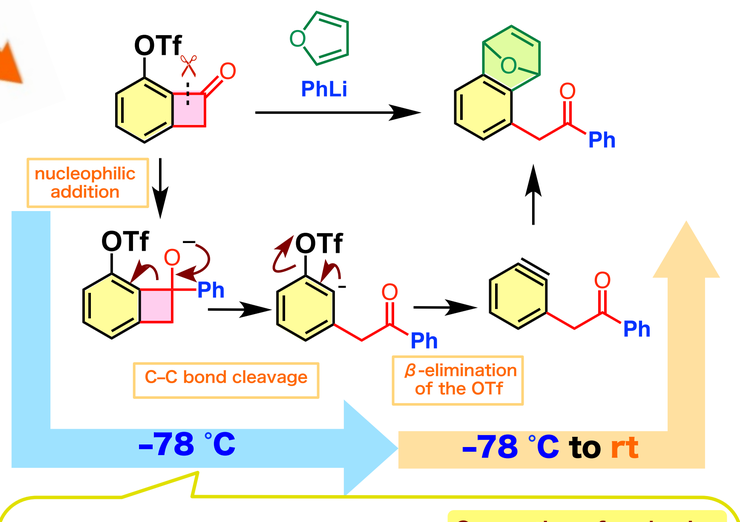


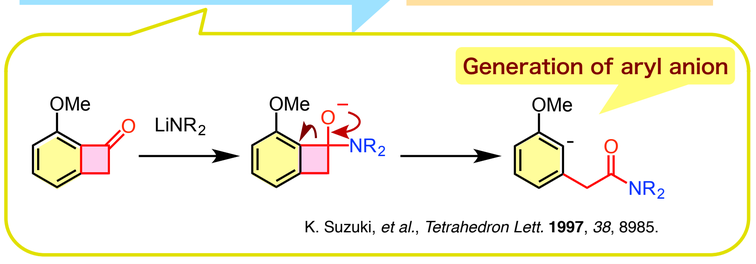
Optimization of the reaction conditions



solvent	yield (^{1}H NMR)
THF	51% (isolated)
Et_2O	51%
CPME	61%
n-hexane	19%
toluene	84% (isolated)

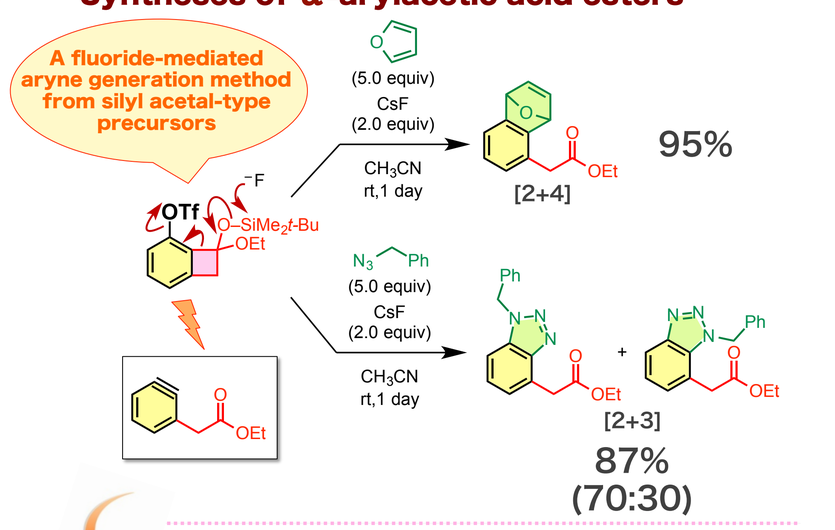
Proposed mechanism



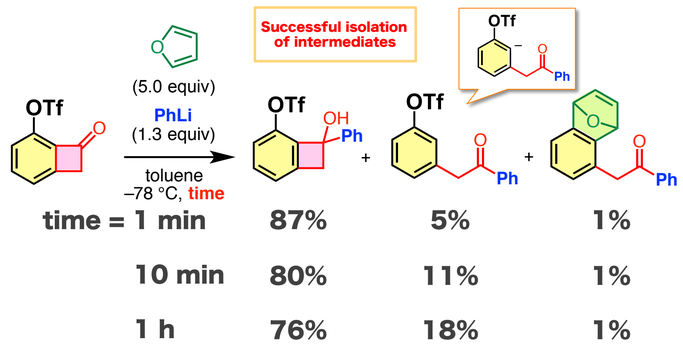


K. Suzuki, *et al.*, *Tetrahedron Lett.* **1997**, *38*, 8985.

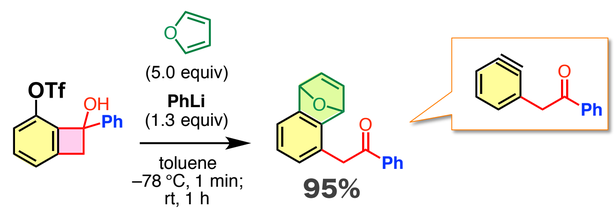
Syntheses of α-arylacetic acid esters



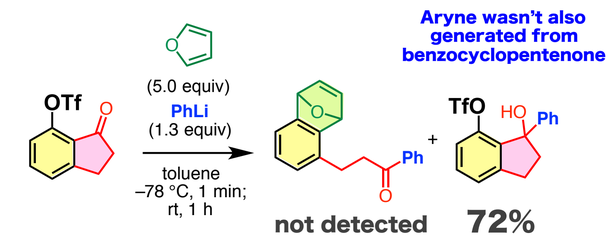
Mechanistic studies



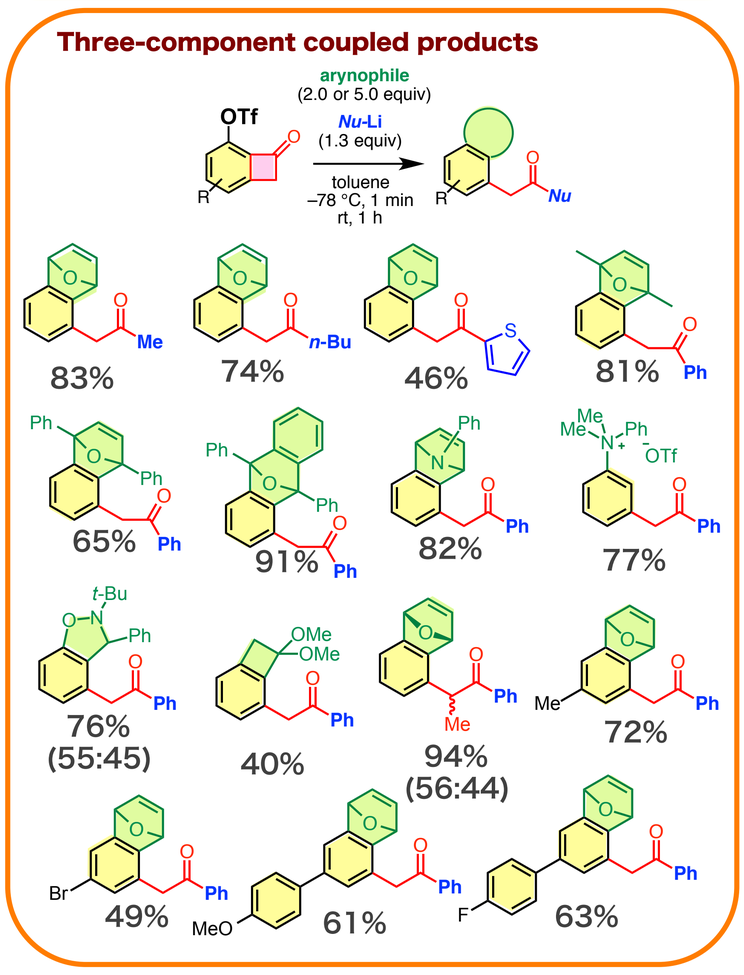
Aryne was also generated from benzocyclobutenol



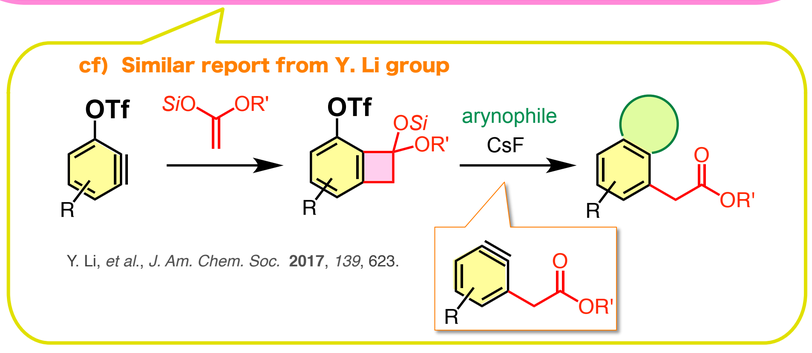
Effect of ring strain for C–C bond cleavage

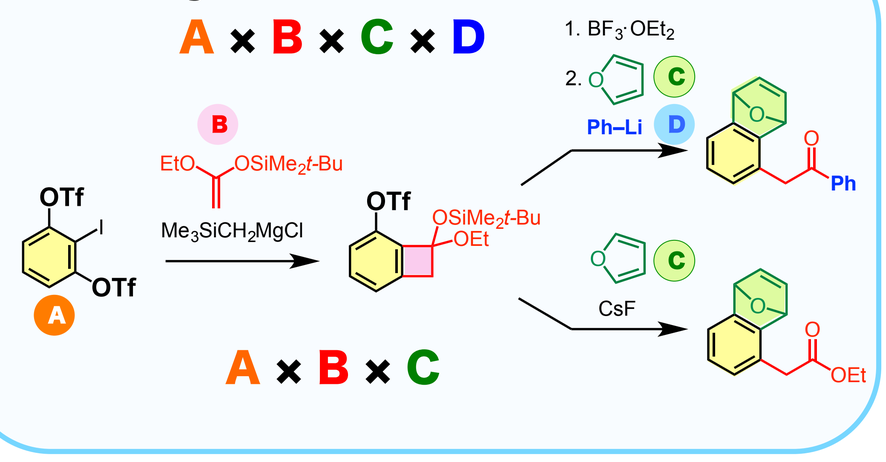


Three-component coupled products



cf) Similar report from Y. Li group



Y. Li, *et al.*, *J. Am. Chem. Soc.* **2017**, *139*, 623.

Summary