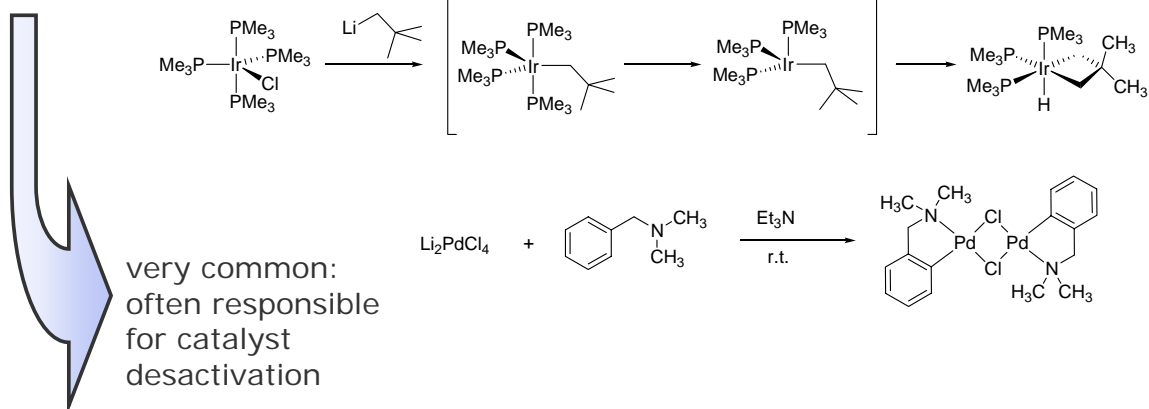
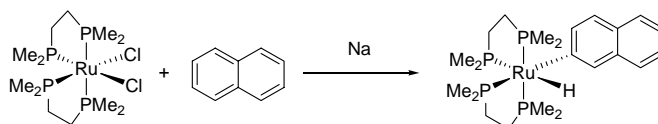


C-H-Activation

Cyclometallation

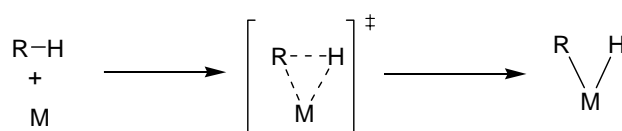


Intermolecular C-H-Activation

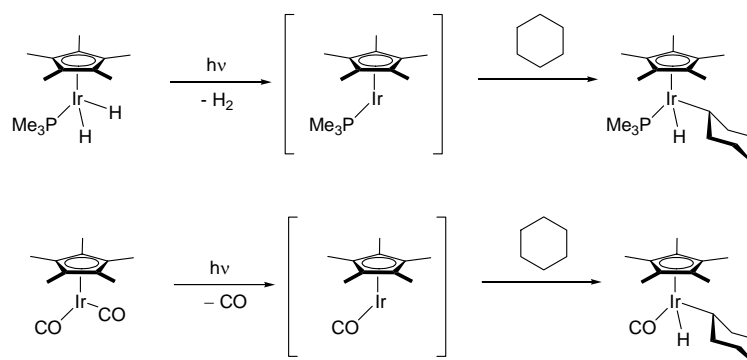


Chat, Davidson *JCS* **1965** 843

C-H Oxidative Addition

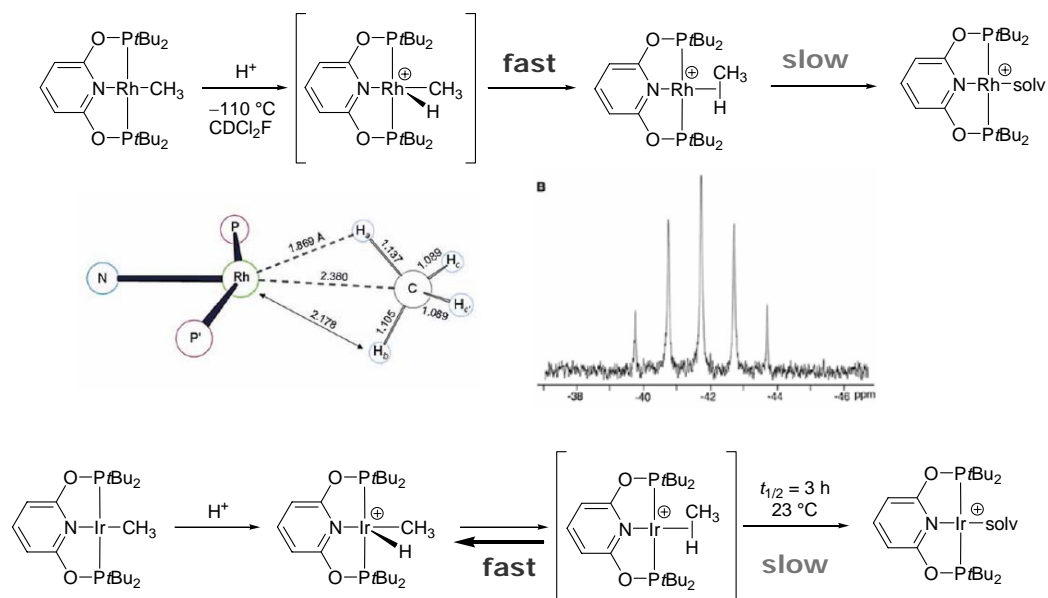


stoichiometric:



Hoyano, Graham *JACS* **1982**, *104*, 3723
Bergman *JACS* **1982**, *104*, 352

Alkane Complexes

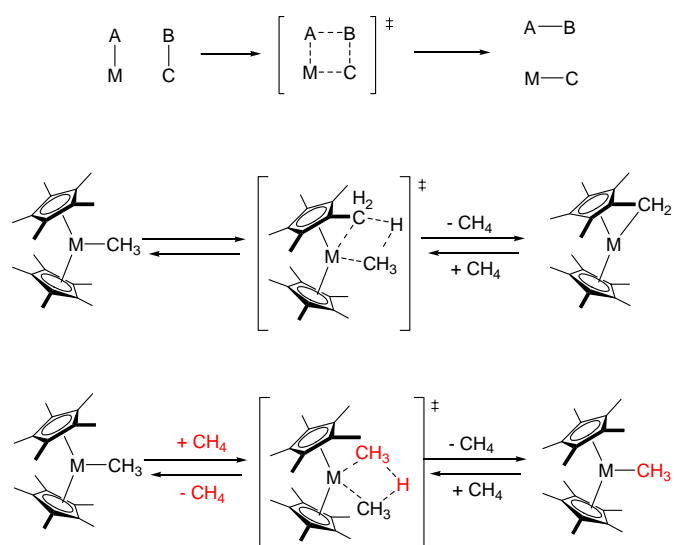


Brookhart *Science* **2009** 326 553

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σ-Bond Metathesis



Bercaw *JACS* **1987**, 109, 203

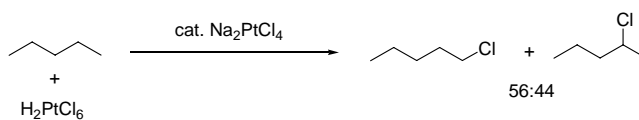
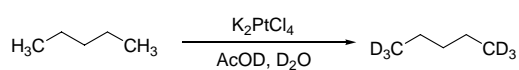
Watson *JACS* **1983**, 105, 6491

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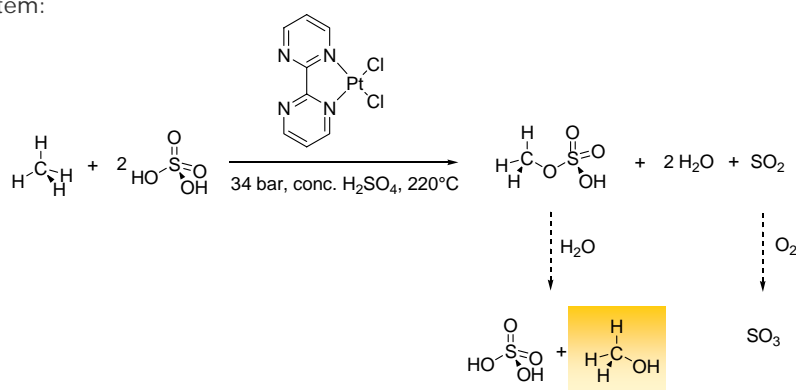
Pt catalysed CH-Oxidation

Initial results:



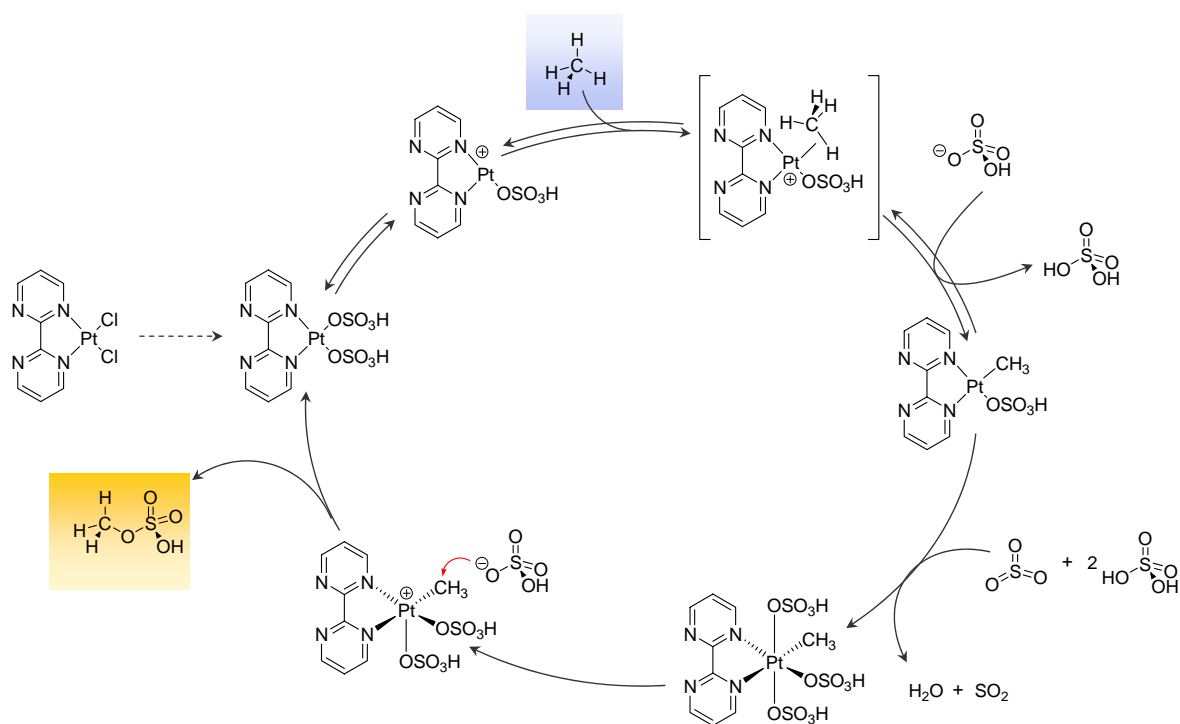
Shilov *Coord Chem Rev* **1977** 24 97

Catalytica system:



Periana *Science* **1998** 280 560

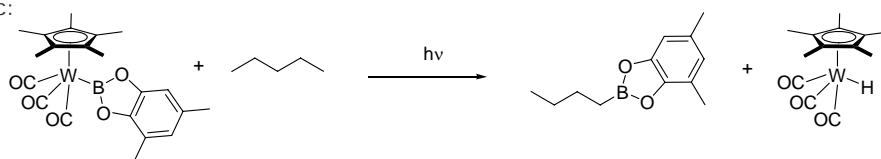
Catalytica aka Periana System



Alkane Borylation

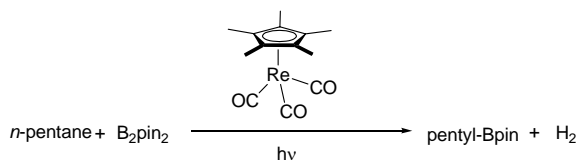
review: Marder, Hartwig *Chem. Rev.* **2010**, *110*, 890

stoichiometric:

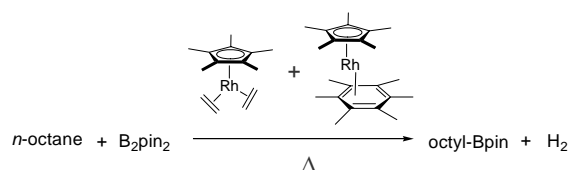


Waltz, Hartwig *Science* **1997**, *277*, 211
Waltz, Muhoro, Hartwig *JACS* **2000**, *122*, 11358

catalytic:



Chen, Hartwig *Angew. Chem. IEE* **1999**, *38*, 3391

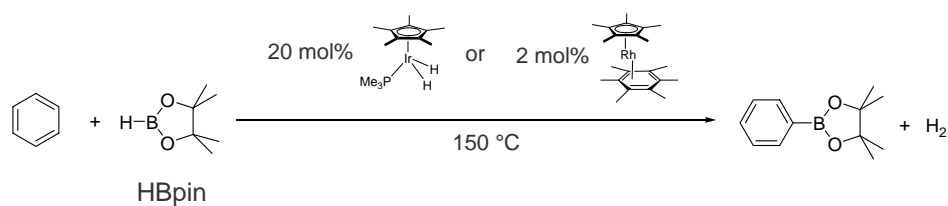


Chen, Schlecht, Semple, Hartwig *Science* **2000**, *287*, 1995
Webster, Fan, Hall, Kunz, Hartwig *JACS* **2003**, *125*, 858
Lawrence, Takahashi, Bae, Hartwig *JACS* **2004**, *126*, 15334
Hartwig, Cook, Hapke, Incarvito, Fan, Webster, Hall *JACS* **2005**, *127*, 2538

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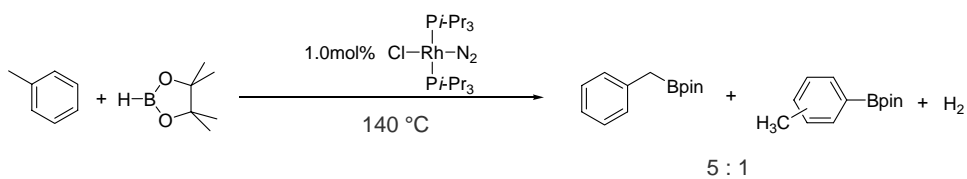
21

Arene Borylation



Iverson, Smith *JACS* **1999**, *121*, 7697
Cho, Iverson, Smith *JACS*, **2000**, *122*, 12868
Tse, Cho, Smith *Org. Lett.* **2001**, *3*, 2831

Benzylic borylation

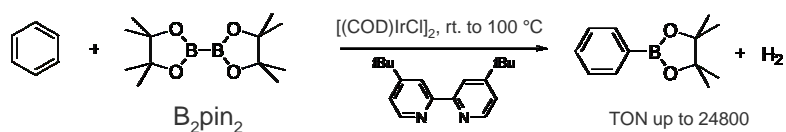


Shimada, Batsanov, Howard, Marder *Angew. Chem. IE* **2001**, *40*, 2168

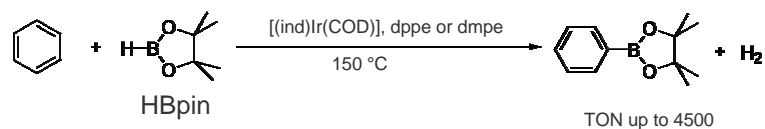
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Borylation of Arenes



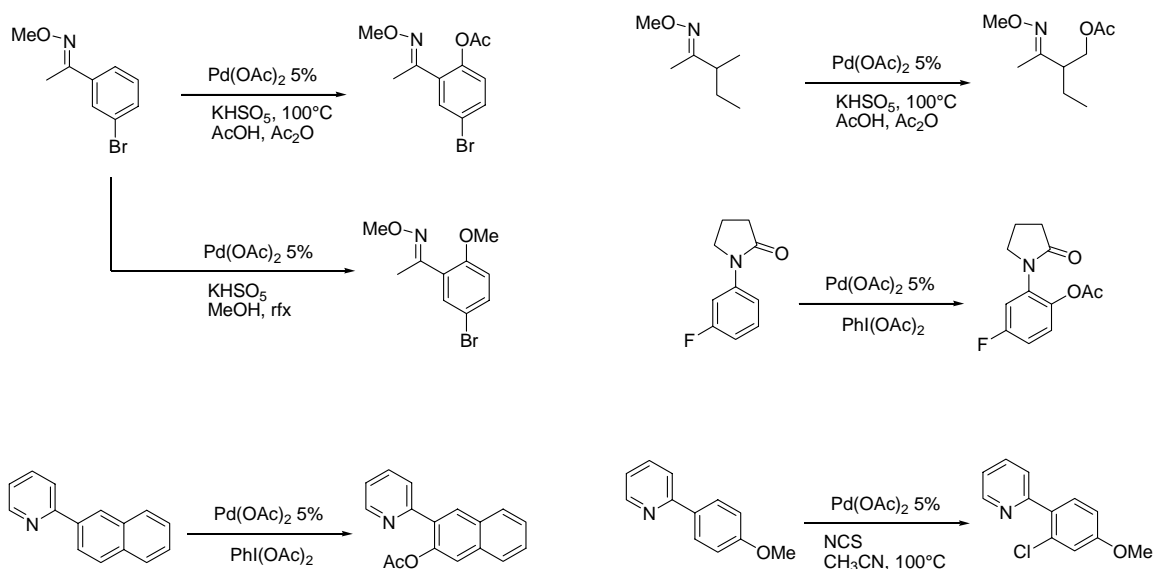
Ishiyama, Hartwig *JACS* **2002**, *124*, 390



Maleczka, Smith *Science* **2002**, *29*, 305

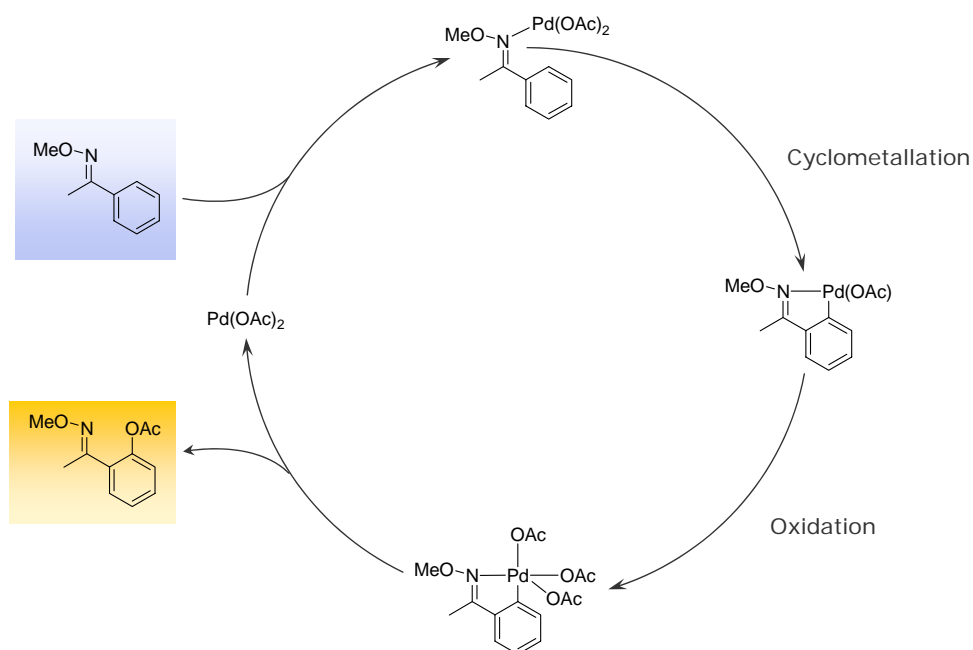
functional group tolerance: halides, ethers, esters, nitriles
selectivity: least steric hinderance

Palladium Catalysed C-H-Oxidation



Sanford *OL* **2006** *8* 1141
TH **2006** *62* 2439

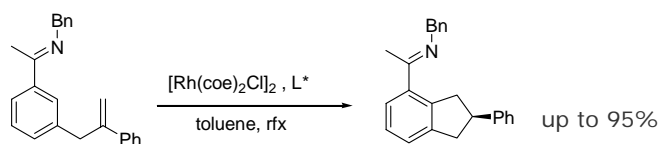
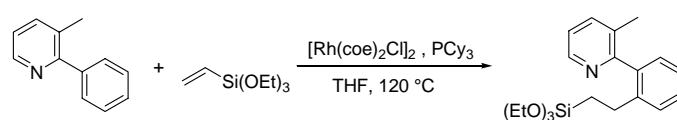
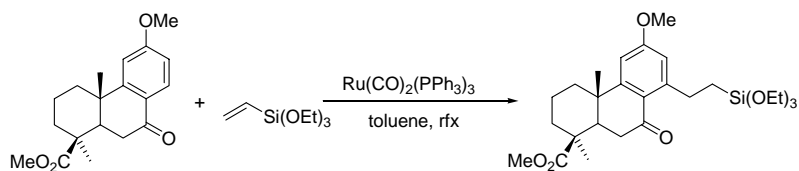
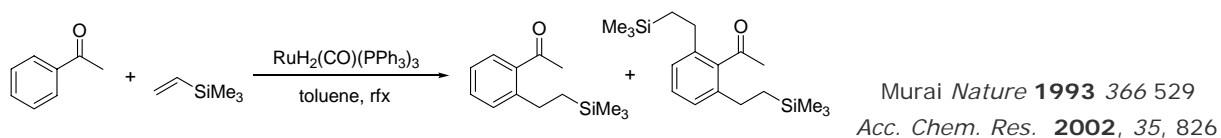
Palladium Catalysed C-H-Oxidation



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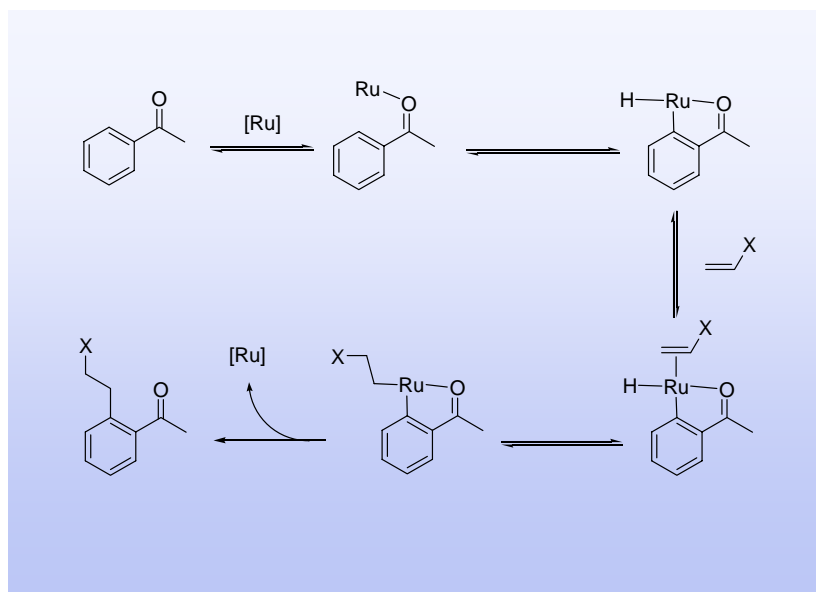
Murai Reaction



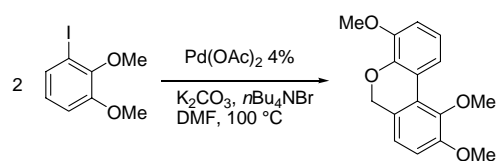
Ellman *JACS* **2004** 126 7192

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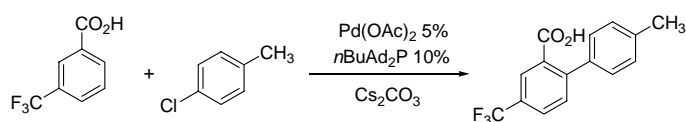
50



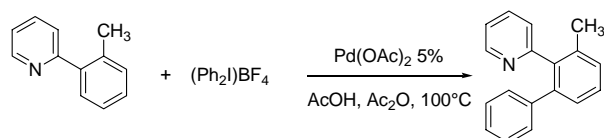
C-H-Activation C-C-Coupling



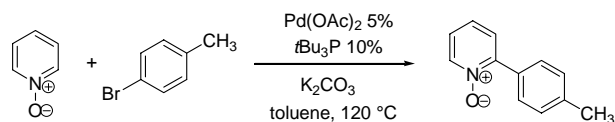
Dyker *Angew* **1992** 104 1079



Daugulis *JACS* **2007** 129 9879



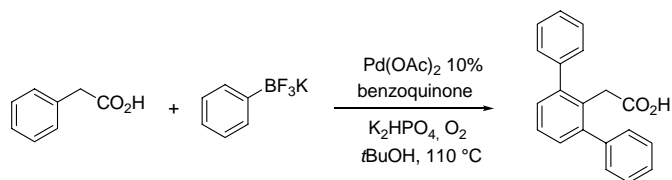
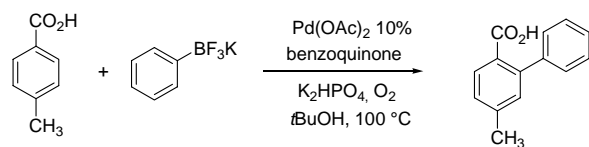
Sanford *JACS* **2005** 127 7330



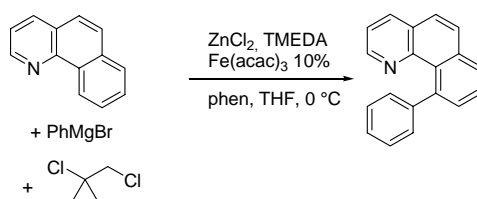
Fagnou *JACS* **2005** 127 18020

Yu *Angew* **2009** 121 5196

C-H-Activation C-C-Coupling



Yu *JACS* **2008** 130 17676



Nakamura *JACS* **2008** 130 5858