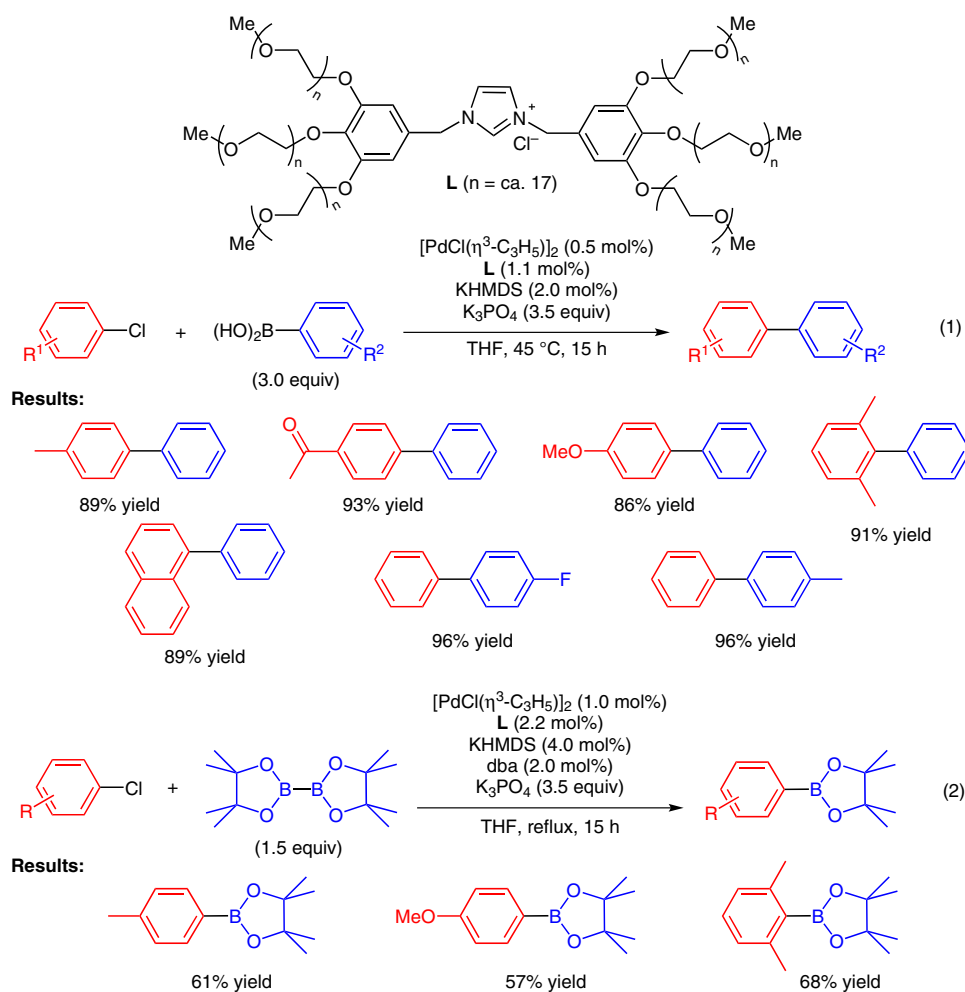


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N-Heterocyclic Carbene Ligands Bearing Poly(ethylene glycol) Chains: Effect of the Chain Length on Palladium-Catalyzed Coupling Reactions Employing Aryl Chlorides

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Suzuki Coupling with an N-Heterocyclic Carbene–Palladium Catalyst



Significance: N-Heterocyclic carbenes (NHCs) **L** bearing poly(ethylene glycol) chains promoted the palladium-catalyzed Suzuki–Miyaura coupling of aryl chlorides with arylboronic acids to give the corresponding biaryls in up to 96% yield (eq. 1). The borylation of aryl chlorides with B_2pin_2 also proceeded under similar catalytic conditions to afford the corresponding aryl boranes in up to 68% yield (eq. 2).

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Comment: In the reaction of chlorotoluene with phenylboronic acid, the catalytic performance of **L** ($n \approx 17$) was superior to that of other NHC ligands, such as **IMes** or **IPr**, and to NHC ligands **L** with shorter poly(ethylene glycol) chains ($n = 0, 4, \sim 12$).