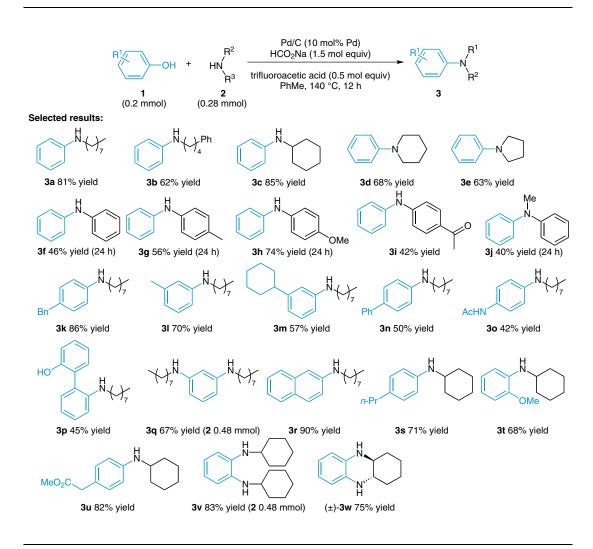
Z. CHEN, H. ZENG, S. A. GIRARD, F. WANG, N. CHEN, C.-J. LI\* (MCGILL UNIVERSITY, MONTREAL, CANADA) Formal Direct Cross-Coupling of Phenols with Amines *Angew. Chem. Int. Ed.* **2015**, *54*, 14487–14491.

## Direct Cross-Coupling of Phenols with Amines Using Palladium on Carbon



**Significance:** Palladium on carbon catalyzed the formal dehydrative direct cross-coupling of phenols with amines in the presence of sodium formate and trifluoroacetic acid in toluene to give the corresponding secondary or tertiary amines in ≤90% yield (33 examples).

**Comment:** When biphenol was used as the substrate, only one C–N bond was formed (**3p**), whereas two C–N bonds were formed in the reaction of resorcinol (**3q**). Product **3u**, bearing an ester group, was obtained without ester–amine exchange. A nitrogen-containing heterocyclic product **3w** was obtained from the reaction of catechol with cyclohexane-1,2-diamine.

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Polymer-Supported Synthesis

## Key words

palladium on carbon

cross-coupling

phenols

amines

