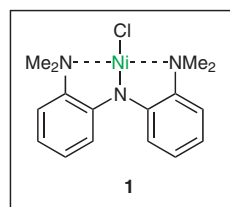
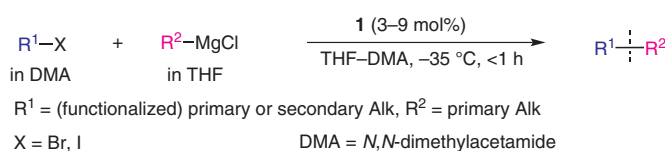


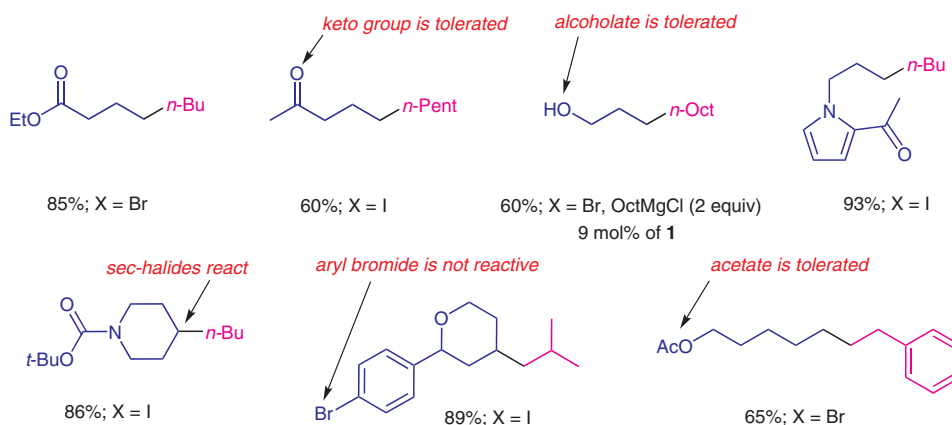
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Nickel-Catalyzed Cross-Coupling of Non-Activated and Functionalized Alkyl Halides with Alkyl Grignard Reagents  
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# Nickel-Catalyzed Coupling of Alkyl Halides and Alkyl Grignard Reagents



Examples (with 3 mol% of **1**):



**Significance:** Grignard reagents are desirable nucleophiles in coupling reactions, since they are inexpensive and easy to prepare. The use of a pincer nickel complex (**1**) enables their highly efficient  $\text{sp}^3\text{-sp}^3$  cross-coupling with alkyl bromides and iodides. The reaction proceeds at low temperatures, so that even highly reactive functionalities like ketones are tolerated.

**Comment:** Alkyl bromides and alkyl iodides react at similar rates, while alkyl chlorides are inert. Interestingly, aryl bromides do not participate in the coupling under these conditions. *N,N*-Dimethylacetamide (its mixture with THF) is the solvent of choice, NMP and other solvents give lower yields. Nickel(IV)-bis(alkyl) intermediates are tentative intermediates in this reaction.

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Grignard reagents  
nickel complexes

**SYNFACTS**  
*of the month*