
Copper-Catalyzed Cross-Coupling of Nonactivated Secondary Alkyl Halides and Tosylates with Secondary Alkyl Grignard Reagents


**Cu-Catalyzed Coupling of Secondary Alkyl Electrophiles and Alkyl Grignards**

![Reaction Scheme]

**Significance:** A novel method for the cross-coupling of nonactivated secondary alkyl halides and pseudo halides with secondary Grignard reagents with a copper catalyst is described. The addition of TMEDA and LiOMe was found to be crucial for the success of the reaction. A broad range of functional groups including esters, amides and aryl halides, is tolerated under the reaction conditions.

**Comment:** Interestingly, the reaction proceeds according to a classical SN2 mechanism with inversion of configuration. Therefore, easily accessible chiral secondary alcohols can be converted into chiral tosylates and alkylated with a copper-catalyst with either primary or secondary alkyl Grignard reagents to furnish the products in high enantiomeric excess.

**Selected examples:**

- 81% yield, X = OTs
- 74% yield, X = Br
- 64% yield, X = Br
- 89% yield, X = Br
- 70% yield, 99% ee, X = OTs
- 67% yield, 98% ee, X = OTs

**Key words**

Copper

Inversion

Grignard reagents

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