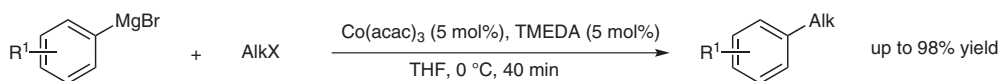


G. CAHIEZ,\* C. CHABOCHE, C. DUPLAIS, A. MOYEUX (CNRS - UNIVERSITÉ DE PARIS 13, BOBIGNY, FRANCE)

A New Efficient Catalytic System for the Chemoselective Cobalt-Catalyzed Cross-Coupling of Aryl Grignard Reagents with Primary and Secondary Alkyl Bromides

*Org. Lett.* **2009**, *11*, 277-280.

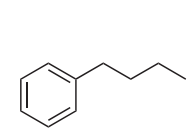
## Efficient Cobalt-Catalyzed Coupling of Aryl Grignard Reagents with Alkyl Bromides



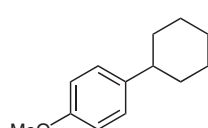
R<sup>1</sup> = H, 2-MeO, 4-MeO

Alk = primary, secondary, functionalized

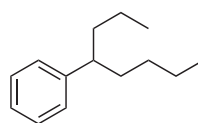
X = Br, I



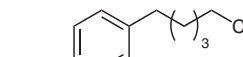
94% (95% from *n*-Bul)



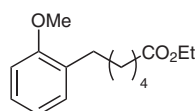
97%



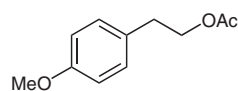
98% (10% if X = OTs)



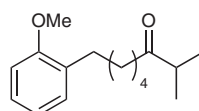
97%



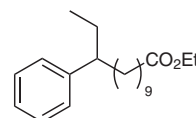
88%



97%



88%



92%

**Significance:** An efficient cobalt-catalyzed cross-coupling reaction of aryl Grignard reagents with primary and secondary alkyl bromides is reported. The reaction proceeds rapidly under very mild conditions and tolerates many functional groups. A readily available cobalt catalyst is used in the process, which is in general more efficient and versatile than the similar iron-catalyzed  $sp^2$ - $sp^3$  cross-coupling reactions.

**Comment:** Due to the relatively fast reaction (0 °C, 40 min) functional groups like ester, amide and ketone are well tolerated. Alkyl iodides give similar yields as bromides, while chlorides and tosylates do not react. Hindered mesitylmagnesium bromide gives low yield of the product. Interestingly, the cobalt source is also important in this reaction, and  $CoCl_2$  is less efficient in the presence of TMEDA than  $Co(acac)_3$ .

**SYNFACTS Contributors:** Paul Knochel, Andrei Gavryushin  
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Category

Metal-Mediated  
Synthesis

Key words

alkyl-aryl cross-  
coupling

cobalt catalysis

Grignard reagents

**SYNFACTS**  
*of the month*