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Transition-Metal-Free Carboxylation of Organozinc Reagents Using CO_2 in DMF Solvent
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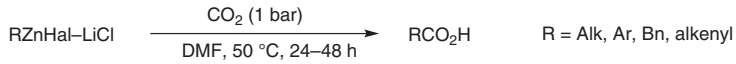
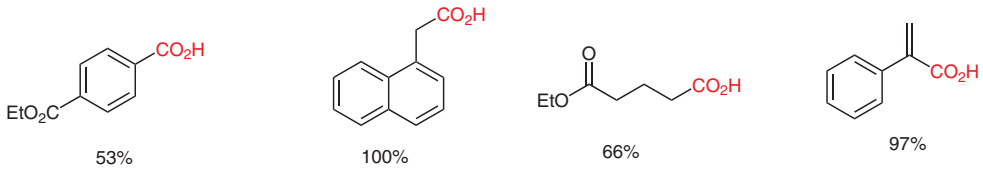
Carboxylation of Organozinc Reagents Using CO_2 in DMF

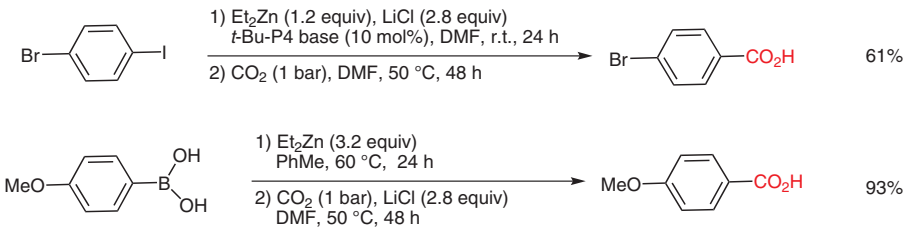
Organozinc prepared by direct insertion of Zn metal:



Examples of carboxylations:



Arylzinc compounds via I–Zn and B–Zn exchange reactions:



Significance: This is the first report on the transition-metal-free carboxylation of organozinc compounds. Functionalized alkyl-, alkenyl-, benzylic, and arylzinc compounds prepared by a variety of methods can be involved in this reaction affording good yields of the corresponding acids. This is a simple and useful method for the preparation of functionalized carboxylic acids.

Comment: The carboxylation of PhZnI–LiCl in THF is very sluggish and gives in the absence of LiCl only traces of the product. Electron-withdrawing groups and steric hindrance slow the reaction down. For a method of palladium-catalyzed carboxylation of organozinc compounds, see: C. S. Yeung, V. M. Dong *J. Am. Chem. Soc.* **2008**, *130*, 7826.

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Category
Metal-Mediated Synthesis

Key words
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carboxylation
carbon dioxide