Fe-Catalyzed Cross-Coupling of Alkyl Halides with Alkynyl Grignard Reagents

Significance: The authors report a novel coupling of primary and secondary alkyl halides with alkynylmagnesium reagents with iron catalysis. The use of a bisphosphine ligand bearing peripheral steric bulk as well as slow addition of the Grignard reagent suppress undesired side reactions.

Comment: By using starting materials with two potential reactive sites, for example C(sp^3)-Br and C(sp^3)-OTf, and applying the reported iron-catalyzed cross-coupling with an alkynyl Grignard reagent, the C(sp)–C(sp^3)-coupled products are obtained in excellent yields.

Selected examples:

- 88% yield

- 86% yield

- 68% yield

- 82% yield

- 81% yield

- 73% yield