Chromium-Catalyzed Nozaki–Hiyama–Kishi Reaction

Proposed catalytic cycle:

Significance: Fürstner and Shi reported a chromium-catalyzed Nozaki–Hiyama–Kishi reaction that is applicable to a broad substrate scope because it relates to both aldehydes and (pseudo) halides. It employs non-toxic manganese as a stoichiometric reductant to regenerate the active chromium(II) species and affords the products in good to excellent yields.

Comment: The authors noted that both CrCl₂ and CrCl₃ were effective in mediating the reaction. Attempts to further improve the catalytic turnover proved successful as the use of either chromocene (Cp₂Cr) or CpCrCl₂·THF as pre-catalysts proved successful even at catalytic loadings of ≤1.0 mol% of chromium.