Dual Role of Allylsamarium Bromide as a Grignard Reagent and a Single Electron Transfer Reagent in the One-Pot Synthesis of Terminal Olefins


Terminal Olefin Synthesis via Reaction of Aldehydes with Allylsamarium Bromide

Significance: A simple and efficient one-pot protocol for the synthesis of terminal alkenes has been reported. The reaction of carbonyl compounds with allylsamarium bromide in the presence of diethyl phosphate furnishes the corresponding olefins in good to excellent yields.

Comment: Allylsamarium bromide acts in the reported reaction as both, a nucleophilic reagent and a single electron transfer reagent. Moreover, the described methodology is very versatile since several functional groups are tolerated.

RCHO + \(\text{SmBr}_3\) (2 equiv) (EtO)\(_2\)P(O)H (2 equiv) THF, 65 °C, 12 h

Selected examples:

- MeS
  - 89% yield
- O
  - 76% yield
- Ar
  - 88% yield

- 62% yield
- 71% yield
- 51% yield

- 42% yield
- 91% yield
- 89% yield

Category: Metal-Mediated Synthesis

Key words: terminal olefines aromatic aldehydes samarium