Copper-Catalyzed Asymmetric Allylic Alkylation with Organolithium Reagents

**Significance:** This report describes the utilization of organolithium reagents as nucleophile sources in copper-catalyzed asymmetric allylic alkylation. Using Taniaphos as the chiral ligand, various alkyl-lithium reagents are nicely coupled with substituted allyl bromides in $S_N2'$ manner. Using a chiral phosphoramidite ligand allows cinnamyl chloride and phenyllithium to participate in the reaction.

**Comment:** The authors proposed from $^{31}$P NMR studies that the reaction passes through an intermediate state of a diphosphine copper monoalkyl species. Using ether as co-solvent stops the formation of this intermediate, therefore diminishes enantioselectivity. This method tolerates a broad range of functional groups. It provides high regio- and enantioselectivity for a very general scope of allyl halides.