Category

Metals in Synthesis

Key words

alkenes

cross-coupling

organolithium reagents

palladium catalysis

vinyl halides

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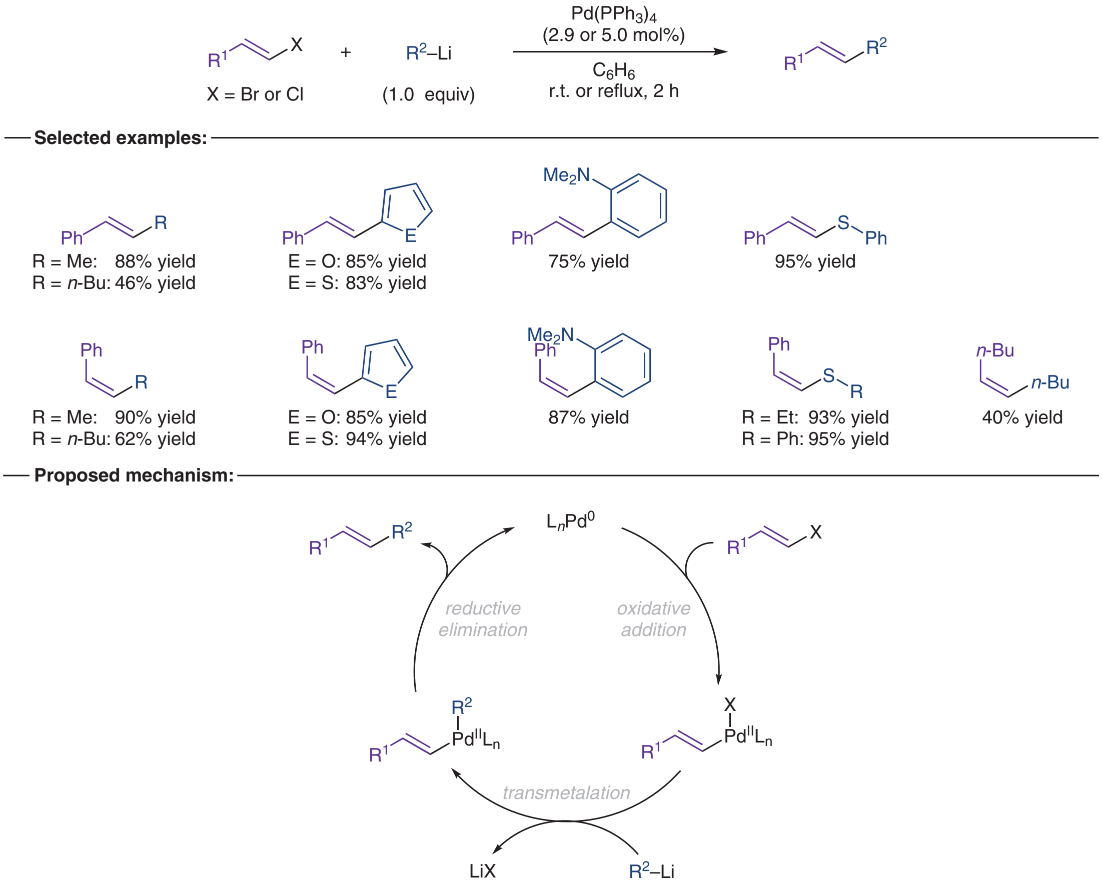
Stereoselective Synthesis of Alkenes and Alkenyl Sulfides from Alkenyl Halides Using Palladium and Ruthenium Catalysts

J. Org. Chem. **1979**, *44*, 2408–2417, DOI: 10.1021/jo01328a016.

The Murahashi Reaction: Palladium-Catalyzed Cross-Coupling of Vinyl Halides with Organolithium Reagents



Significance: While Murahashi initially reported his reaction in 1975 (*J. Organomet. Chem.* **1975**, *91*, C39), the catalytic variant of the Murahashi coupling was disclosed in 1979 by the same research group. The stereoselective C(sp^2)–C(sp^3) cross-coupling reaction of vinyl halides with organolithium reagents offers access to a range of alkenes in moderate to good yields. Since its discovery, the Murahashi reaction remained overlooked for over 30 years primarily due to the high reactivity and low functional-group tolerance of the organolithium coupling partner.

Comment: Building on Feringa‘s pioneering contribution (*Nat. Chem.* **2013**, *5*, 667), several research groups have been actively involved in enhancing this reaction, eventually leading to its revival. Presently, the utilization of earth-abundant metal catalysts and the application of flow reactors are viable options.

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