Formic acid-palladium acetate-1,4-bis(diphenylphosphino)butane: an effective catalytic system for regioselective hydrocarboxylation of simple and functionalized olefins.

Abstract

Reaction of mono- and disubstituted olefins, e.g., PhCH:CH2, with formic acid, catalytic quantities of palladium acetate and 1,4-bis(diphenylphosphino)butane, in a carbon monoxide atm., affords carboxylic acids, e.g., PhCH2CH2CO2H, in 45-98% yield. The reaction is regioselective and, in a no. of cases, regiospecific for the straight-chain acid. Functional groups such as trimethylsilyl, aldehyde, ketone, nitrile, acid and amide and trisubstituted olefins can be tolerated in this reaction.