Palladium-Catalyzed Reductive Heck Reaction

Significance: Water represents the cheapest and most environmentally benign source of hydrogen or hydride; therefore, its use in combination with transition-metal catalysis is very appealing. In the present work, the authors present a palladium-catalyzed enantioselective reductive Heck reaction using water as final hydride donor.

Comment: N-Aryl acrylamides reacted in the presence of a \([\text{PdCl}_2(\text{MeCN})_2]\) catalyst and (S)-t-BuPHOX ligand to generate the corresponding products in good yields and good enantioselectivities using water as hydride source. The use of DABCO as a base and a catalytic amount of \(\text{B}_2(\text{OH})_4\) was found to be crucial for the success of the transformation. The use of deuterium oxide allowed the synthesis of D-labeled oxindoles with >90% D incorporation.

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