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Water as a Hydride Source in Palladium-Catalyzed Enantioselective Reductive Heck Reactions
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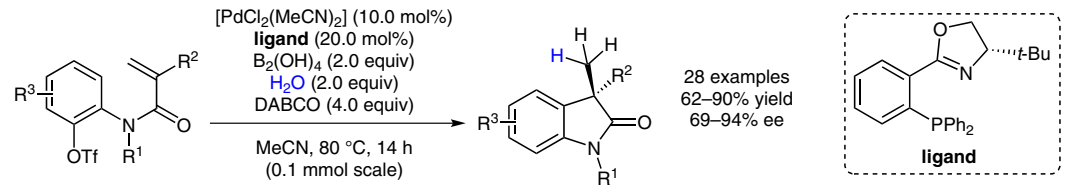
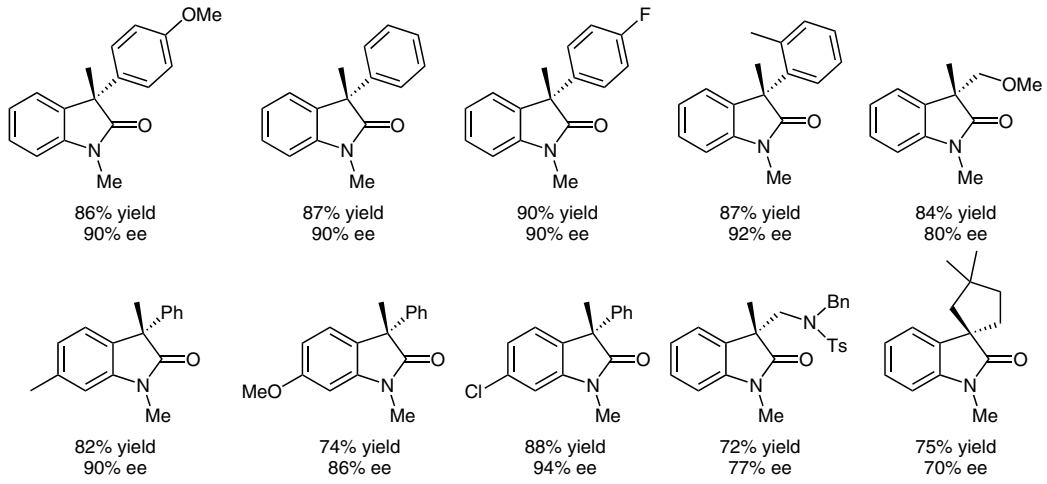
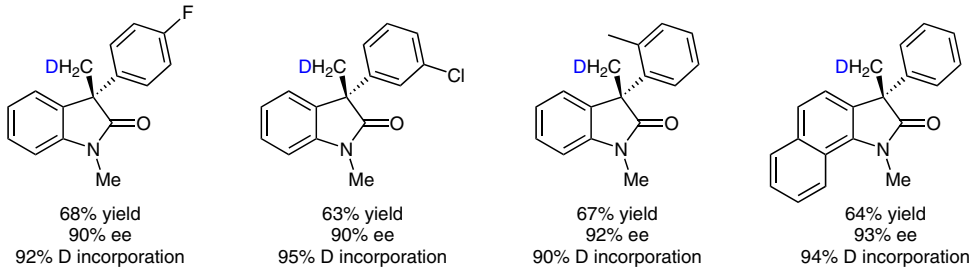
Palladium-Catalyzed Reductive Heck Reaction



Selected examples:



Reactions performed with D_2O and B_2Cat_2:



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 $[PdCl_2(MeCN)_2]$ 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 $B_2(OH)_4$ 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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Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

Key words

palladium catalysis

reductive Heck reaction

oxindoles

hydride source