Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

Key words

iridium catalysis

phosphine oxides

desymmetrization

amidation

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Cooperative Effects between Chiral Cp^x–Iridium(III) Catalysts and Chiral Carboxylic Acids in Enantioselective C–H Amidations of Phosphine Oxides
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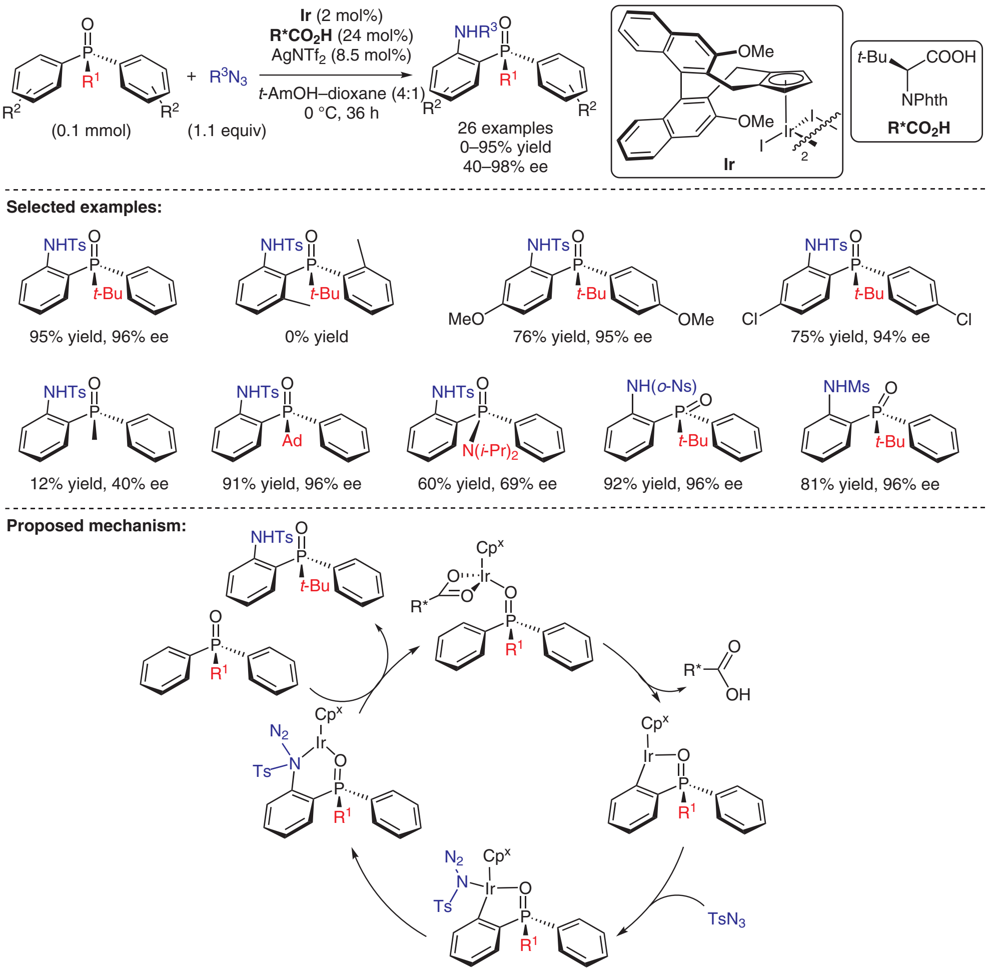
Enantioselective Iridium-Catalyzed C–H Amidation of Diaryl Phosphine Oxides



Significance: The synthesis of chiral phosphorus compounds is always of interest because they are crucial as ligands for asymmetric catalysis. Cramer and co-workers report the desymmetrization of diaryl phosphine oxides through iridium-catalyzed amidation. The reaction used a chiral iridium and chiral acid acting cooperatively, which was demonstrated through a match and mismatch effect.

Comment: The reaction tolerates some variation of substitution on the aryl rings and works best with bulky alkyl substitution on the phosphorus. Other sulfonates could be incorporated. The reaction proceeds through a C–H activation catalyzed by the chiral acid bound iridium complex followed by aryl amidation by the sulfonyl azide.

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