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Carbon–Phosphorus Bond Formation by Enantioselective Palladium-Catalyzed Allylation of Diphenylphosphine Oxide

Eur. J. Org. Chem. **2014**, 6846–6849.

Enantioselective Allylation of Diphenylphosphine Oxide

Reaction with diphenylphosphine oxide

Selected examples:

Reaction with diisopropyl phosphonate

Selected examples:

Significance: Enantioselective reactions for the formation of C–P bonds have received less attention than other carbon–heteroatom bond-forming reactions. The phosphorus-containing products or their derivatives can be used as chiral ligands, for example. Zhao and co-workers describe here the enantioselective allylation of diphenylphosphine oxide and the racemic allylation of diisopropyl phosphonate. Related work by Togni and co-workers has been reported with diarylphosphines (*Angew. Chem. Int. Ed.* **2008**, 47, 4878).

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Synfacts 2015, 11(1), 0060 Published online: 15.12.2014
DOI: 10.1055/s-0034-1379695; **Reg-No.:** L16114SF

Comment: In the reaction with diphenylphosphine oxide, the products are formed in moderate to high yields, with enantiomeric excesses showing similar variation. Electron-poor substrates were superior partners, probably compensating for the low nucleophilicity of the phosphine oxide. The second reaction, which uses a different catalyst, shows a somewhat broader substrate scope.