

带有金刚烷基团的新型手性单齿亚磷酸酯配体的合成及其在不对称1,4-共轭加成反应中的应用

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摘要 以轴手性的 BINOL/H8-BINOL (BINOL 为联苯酚) 和大位阻的金刚烷酰氯为原料, 合成了系列新型手性单齿亚磷酸酯配体, 并应用于 Cu 催化的二乙基锌对环烯酮的不对称1,4-共轭加成反应中. 结果表明, 配体结构中部分氢化的 2,2'-(1,1'-联萘基)亚磷酸酯单元和金刚烷基团, 有助于改善反应的对映选择性, 对映选择性最高可达 79%.

关键词: 不对称1,4-共轭加成 单齿亚磷酸酯配体 铜盐; 环烯酮 金刚烷; 氢八联萘酚单元

Abstract: A series of new bulky monophosphite ligands were synthesized from axially chiral BINOL/H₈-BINOL (BINOL: 1-(2-hydroxynaphthalen-1-yl)naphthalen-2-ol) and highly sterically hindered adamantylcarbonyl chloride. The effectiveness of these ligands was evaluated by the Cu-catalyzed asymmetric 1,4-conjugate addition of diethylzinc to cyclic enones with enantioselectivities of up to 79% ee. The results showed that a ligand structure comprising a partially hydrogenated 2,2'-(1,1'-binaphthyl)phosphite scaffold and an adamantyl moiety was effective in improving the enantioselectivity.

Keywords: enantioselective 1,4-conjugate addition, phosphite ligand, copper salt, cyclic enone, adamantyl, H₈-binaphthyl

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