

Ligand-Controlled Direct Hydroformylation of Trisubstituted Olefins

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Hydroformylation is a highly atom-economical synthetic reaction to prepare aldehydes by addition of CO and H₂ to olefins. It is an industrially utilizing homogeneous catalytic reaction as the resulting aldehyde products are used to further produce oxo-alcohols more than 10 million tons annually. Although Co-based catalysts were initially developed, Rh-based catalysts have been the topic of recent research because the regioselectivity and stereoselectivity of Rh-catalyzed hydroformylation can be efficiently controlled by ligands. Many efficient ligands for hydroformylation have been developed, but it has been a challenge to achieve direct hydroformylation of tri-substituted olefins. We recently reported a new class of π -acceptor ligand, bicyclic bridgehead phosphoramidite (briphos). Here we introduce our birphos ligand and present the Rh-catalyzed direct hydroformylation of tri-substituted olefins by ligand modification of briphos ligands