

Rhodium(I) complexes with 1'-(diphenylphosphino)ferrocenecarboxylic acid as active and recyclable catalysts for 1-hexene hydroformylation.

Autorzy

Anna M. Trzeciak

Petr Štěpnička

Ewa Mieczysława

Józef J. Ziółkowski

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The rhodium complex $\text{trans-}[\text{Rh}(\text{CO})(\text{Hdpf-}\kappa\text{P})(\text{dpf-}\kappa\text{O,P})]$ (1), (Hdpf = 1'-(diphenylphosphino)ferrocenecarboxylic acid) was used as an efficient and recyclable catalyst for 1-hexene hydroformylation producing ca. 80% of aldehydes at 10 atm CO/H₂ and 80 degrees C. After the reaction, unchanged complex 1 was separated from the reaction mixture and used again three times with the same catalytic activity. The effect of modifying ligands, phosphines and phosphites, on the reactivity of 1 was investigated. The active catalytic systems containing 1 or $\text{trans-}[\text{Rh}(\text{CO})(\text{L})(\text{dpf-}\kappa\text{O,P})]$ (2) were formed in situ from acetylacetonato rhodium(I) precursors $[\text{Rh}(\text{CO})_2(\text{acac})]$ (3) or $[\text{RhL}(\text{CO})(\text{acac})]$ (4) and Hdpf or Medpf (L = phosphine, Medpf = methyl ester of Hdpf). (c) 2005 Elsevier B.V. All rights reserved.

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