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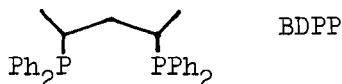
^{31}P NMR Studies of Rhodium Complexes Containing Chelating Diphosphine

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Among the chiral phosphines prepared up to now BDPP appears to be unique in the sense that its rhodium(I) complexes serve as effective homogeneous asymmetric hydrogenation catalysts not only for the reduction of (Z)- α -acylaminoacrylic acids [1] but also for the reduction of α -ethylstyrene, acetophenone, and acetophenonebenzylimine [2].



Composition of the solvent mixture, the amount of the added base, the temperature, and the pressure has a decisive influence on the enantioselectivity. ^{31}P NMR spectroscopy was utilized to determine the nature of the catalyst present in solution.

The $[\text{Rh}(\text{S},\text{S-BDPP})_2]\text{X}$ complexes (1) ($\text{X} = \text{Cl}, \text{ClO}_4, \text{BPh}_4$) have been synthesized and characterized by spectroscopy. In solution (1) is reactive towards CO at ambient condition and oxidatively adds HCl, I_2 to give $\text{trans-}[\text{RhHCl}(\text{S},\text{S-BDPP})_2]^+$ and $\text{trans-}[\text{RhI}_2(\text{S},\text{S-BDPP})_2]^+$ species, respectively.

[1] MacNeil, P.A.; Roberts, N.K.; Bosnich, B. J. Am. Chem. Soc. 1981, 103, 2273.

[2] Bakos, J.; Tóth, I.; Heil, B.; Markó, L. J. Organomet. Chem. 1985, 279, 23.