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Chiral Phosphine Ligands with Amino Acid Moieties

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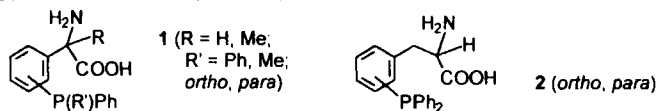
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Chiral Phosphine Ligands with Amino Acid Moieties

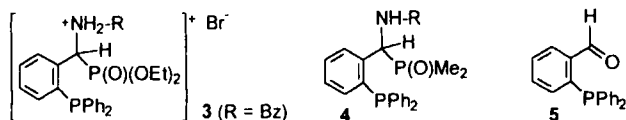
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Amino acids containing functionalized aromatic substituents are of considerable interest as building blocks for the syntheses and the design of new types of proteins and pharmacologically active compounds. In contrast to amino acids bearing phosphonated phenyl substituents [1], phosphinophenyl derivatives have been reported only very recently [2]. We have been able to synthesize phosphinophenyl amino acids of type 1 or 2 by nucleophilic phosphination [3] of the potassium salts of 2- and 4-fluoro- α -phenyl-glycine and -alanine with potassium phosphides $\text{Ph}(\text{R}')\text{PK}$ in high yields.



The X-ray structural analysis of the phenylglycine derivative 1 (R = H, R' = Ph, *ortho*) reveals a hydrogen bridged betaine type structure. Derivatives of phosphine 1 with protected COOH and NH_2 groups have been obtained using standard synthetic procedures. With $[\text{Rh}(\text{CO})_2\text{Cl}]_2$ complexes of composition $\text{Rh}(\text{CO})\text{Cl}(\text{L})$ are formed, the 2-diphenylphosphinophenyl-glycines (L) acting as bidentate P,N-hybride ligands.



Phosphorus analogs 3 of the esters of the phosphinophenyl amino acids and the related phosphine oxides 4 have been obtained in a two stage synthesis employing *ortho*-diphenylphosphino benzaldehyde (5) as a starting material.

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References

- [1] C. Thurieu, C. Guyard, S. Simmonet, T.J. Verbeuren, J.L. Fauchere, *Helv. Chim. Acta* 77, 679 (1994).
- [2] S.R. Gilbertson, G.W. Starkey, *J. Org. Chem.* 61, 2922 (1996).
- [3] M. Hingst, M. Tepper, O. Stelzer, *Eur. J. Inorg. Chem.* 1998, 73.