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Transition-Metal Complexes with Helical Phosphines

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Due to their remarkable properties, helicenes are suitable candidates for use in asymmetric catalysis. Among privileged ligands exhibiting central, axial, or planar chirality, the use of helically chiral ligands in transition metal catalysis is still very rare. Although several pilot experiments have already been carried out in this area, a larger study of the preparation of complexes bearing helical ligands with catalytically significant metals is still missing.¹

This work follows the synthesis of the palladium (II) complex with 9-phosphanyl[7]helicene, where several structural uncertainties were clarified. Furthermore, synthetic pathways were investigated to provide other suitable phosphine derivatives of [6]helicene and their transition metal complexes. In prepared complexes, the influence of phosphine group position on the catalytic activity of helicene complexes was examined.

Attempts on enantiomeric resolution of prepared helicenes were also carried out.

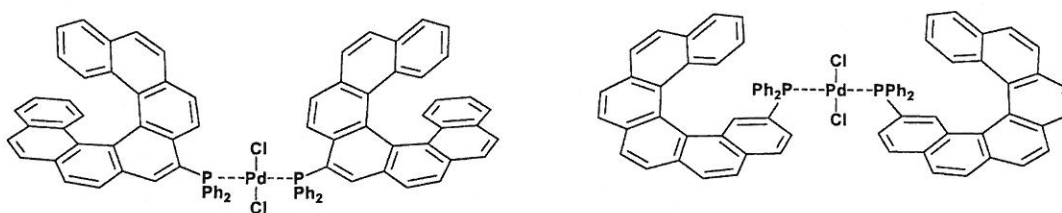


Figure 1 – Transition-metal complexes with helical phosphines

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References

1. Aillard, P.; Voituriez, A.; Marinetti, A. *J. Chem. Soc., Dalton Trans.* 2014, 41, 15263–15278.