

Summary

A versatile approach to fully aromatic 2-amino[6]helicenes (-)-(M)-**69** and (-)-(M)-**118** was developed (Figure). Helicene **69** was obtained in both enantiomeric forms ((-)-(M) and (+)-(P)) on a multigram scale. Full stereocontrol could not be obtained in the case of amino[6]helicene derivative **143**. Employing **69**, the first helically chiral Ru ((-)-(M)-**147**) and Pd ((+)-(P,P)-**148** and (-)-(M)-**149**) NHC complexes have been synthesized and characterized. (-)-(M)-**147** has shown a promising stereinduction in asymmetric olefin metathesis reactions. An NMR study and DFT-calculations suggest that complex (-)-(M)-**147** is conformationally rigid and forced in a preferred conformation, which creates an asymmetric steric congestion in the coordination sphere of the Ru atom. Pd-PEPPSI type complexes (-)-(M)-**149** and (+)-(P,P)-**148** were found to give no stereinduction in asymmetric Suzuki-Miyaura coupling.

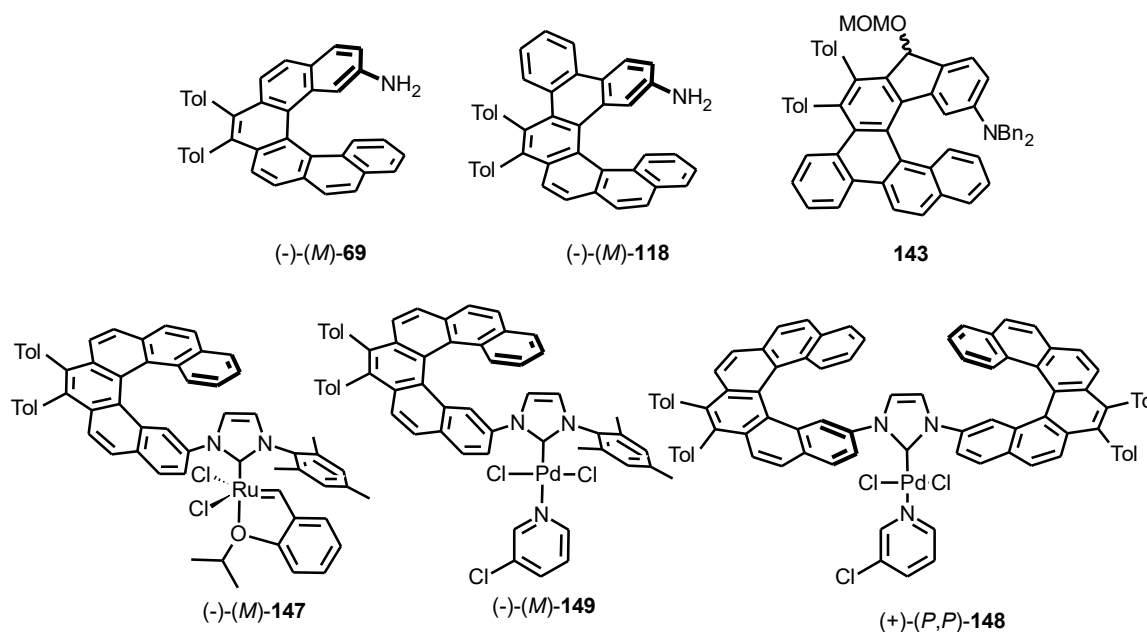


Figure 1: Overview of successfully synthesized compounds.

Publications related to the Thesis

- M. Karras, M. Dąbrowski, R. Pohl, J. Rybáček, J. Vacek, L. Bednárová, K. Grela, I. Starý, I. G. Stará, B. Schmidt, DOI: 10.1002/chem.201802786.
- M. Karras, J. Holec, L. Bednárová, R. Pohl, B. Schmidt, I. G. Stará, I. Starý, *J. Org. Chem.* **2018**, *83*, 5523-5538.
- I. Gay Sánchez, M. Šámal, J. Nejedlý, M. Karras, J. Klívar, J. Rybáček, M. Buděšínský, L. Bednárová, B. Seidlerová, I. G. Stará, I. Starý, *Chem. Commun.* **2017**, *53*, 4370-4373.