

Title: Homologous ferrocene phosphines

Author: Bc. Petr Vosáhlo

Department: Department of Inorganic Chemistry

Supervisor: prof. RNDr. Petr Štěpnička, Ph.D., DSc.

Abstract:

This thesis describes the synthesis and coordination behaviour of ferrocene diphosphines derived from 1,1'-bis(diphenylphosphino)ferrocene (dppf). Dppf is one of the most successful ferrocene ligands, which can be used in various metal-catalyzed reactions. This study aimed to prepare analogous ligands with one dialkylphosphino substituent and one (diphenylphosphino)methyl group. These ligands were oxidized by KSeCN to afford the corresponding phosphinoselenides. The phosphinoselenides were used to assess sigma-donor abilities by measuring the coupling constant $^1J_{\text{SeP}}$ via ^{31}P NMR spectroscopy. Lastly, the coordination behaviour of these ligands in palladium complexes was studied. The homologous ligands usually formed a mixture containing a chelate complex and dimeric species with *trans*-coordinated ligands.

Key words: ferrocene, phosphines, homologous ligands, palladium(II) complexes, structure elucidation.