Title: Synthesis and characterization of bidentate P,N-donor ferrocene ligand

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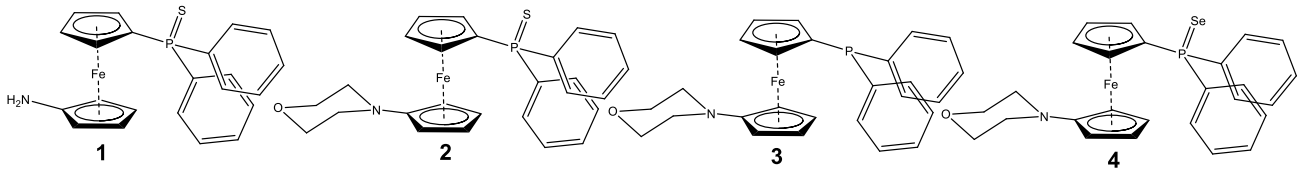
The main goal of this thesis was the preparation and characterization of ferrocene ligand 4-[1'-(diphenylphosphino)ferrocen-1-yl]morpholine (compound **3**). Compared to structurally similar compounds, compound **3** offers greater geometrical flexibility which might have a positive effect in some applications, for example in catalysis by transition metal complexes.



Two new compounds were synthesized along the synthetic route of phosphinoamine **3**, the protected amine **1** and morpholine derivate **2**. Selenide **4** was prepared in order to determine the basicity of compound **3** via the direct scalar interaction of ^{77}Se with ^{31}P. The synthesis comprised phosphinylation of 1,1'-dibromoferrocene, protection of the obtained 1-bromo-1'-(diphenylphosphino)ferrocene with sulfur, azidation and immediate reduction to protected amine **1**. Morpholine derivate **2** was subsequently synthesized by cyclization reaction with bis(2-chloroethyl)ether. Phosphinoamine **3** was obtained by deprotection of compound **2** with Raney nickel. Finally, selenide **4** was obtained by the reaction of **3** with KSeCN. All newly prepared compounds were analyzed by NMR and transmission IR spectroscopy and by ESI mass spectrometry. The purity of compounds was verified by elementary analysis. Compounds **1**, **2** and **3** were further analyzed by X-ray diffraction which provided detailed structures of the compounds.

Keywords: phosphine ligands, ferrocene, hybrid ligands, structure elucidation.