

Abstract

Basis of the presented thesis is the work of the group of Prof. Dr. N. Risch dealing with well developed methods for creating diverse oligopyridine derivatives.

These methods could be transferred to new pyridine type systems which enabled an efficient path to synthesize a variety of starting materials serving as a pool to provide larger ligand systems. This work is mainly focusing on the synthetic part, leading to appropriate ligands capable of being used in OLEDs (Organic Light Emitting Diodes) when complexed with transition metals.

Reaction of *N,N*-dimethyl-methylene iminiumchloride with various functionalized ketones delivered numerous Mannich bases and their hydrochlorides, respectively. Those bases serve as the elemental building blocks for creating tailored pyridine type systems. To fulfill the diverse requirements of such ligands, different substitution patterns were generated systematically.

Position 2-, 3- and 4 of the phenyl ring in phenylpyridine (C^N ligand) was substituted with eg. bromine, chloride or fluorine as they have different electronic influence on the ligand properties.

Combination of cyclic Mannich bases and diverse substituted enamines lead to novel C^NC ligands with a one sided fixed backbone.

In order to obtain distinct properties such as solubility and/or luminescence for their application in OLEDs, it was necessary to create ligands with tailored functionalities. This could be carried out via Suzuki coupling reactions. Different palladium catalysts were employed investigating their behavior in conventional and microwave techniques.