

## Abstract

In this work the synthesis and properties of new conjugated polymers and ditopic ligands are described. The compounds are prepared upon Buchwald-Hartwig, Suzuki and Knoevenagel polycondensation. The structure and characteristic properties such as molecular weight, optical properties, and electrochemical properties are investigated using spectroscopic methods (NMR, UV/vis, PL, mass spectroscopy), gel permeation chromatography, cyclic voltammetry and spectroelectrochemical methods.

Using the Buchwald-Hartwig polycondensation, poly(iminoarylene)s are synthesized from either alkylated dibromo-DPP or dibromo-fluorene and 4-aminoazobenzene, p-aminophenyl-carbazole and p-aminophenylterpyridine. The molecular weights of the resultant polymers are between 2,000 and 32,000 Da. The sensory properties were proven using UV/vis and PL titration experiments with trifluoroacetic acid or metal ions and electrochemical methods.

The polymeric emitters prepared upon Suzuki and Knoevenagel coupling exhibit molecular weights between 6,000 and 33,000 Da and are soluble in common organic solvents such as toluene, chloroform or THF. The absorption maxima are between 479 and 525 nm, whereas the emission maxima are between 552 and 632 nm. The fluorescence quantum yield ranges from 0.2 to 0.86.

Furthermore, ditopic terpyridyl ligands were prepared upon Suzuki cross-coupling. These compounds are strongly luminescent and show interesting changes of the optical properties upon metal complexation.