

Summary

The pi-electron oligomers: Their synthesis and properties

This diploma thesis is focused on the synthesis of *p*-oligophenyleneethynylene rods (dimer and trimer) containing laterally attached naphthalenediimide units as electron acceptor groups. These functionalised short oligomers are intended to serve as model oligodentate acceptors in the study on multiple interactions with electron rich molecules.

The oligomers were assembled from building blocks such as aryl iodides and aryl alkynes bearing a naphthalenediimide unit. The functionalised monomers were combined in a stepwise way by using Sonogashira reaction to form the target *p*-oligophenyleneethynylene oligomers.

The introductory UV-VIS spectroscopic studies on charge transfer complexes between electron donor (pyrene) and electron acceptor (a naphthalenediimide derivative) were performed. In addition, multiple noncovalent interaction between the electron acceptor dimer containing two naphthalenediimide moieties and the electron donor dimer containing two pyrene moieties were investigated by using ^1H NMR titration.

The resulting oligomers and their precursors were characterized by using ^1H NMR, ^{13}C NMR, MS and IR spectroscopy.