ABSTRACT

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Title of Thesis **Preparation of substituted arylsulfanyl azaphthalocyanine**

The aim of this thesis was to prepare a series of symmetrical azaphthalocyanines (AzaPc) with arylsulfanyls on the periphery with different bulky substituents in the *ortho* positions (hydrogen, methyl, isopropyl) or a functional group in the *para* position (-Br). These AzaPc were prepared by cyclotetramerization reactions of 5,6-disubstituted pyrazine-2,3-dicarbonitrile namely 5,6-bis(phenylsulfanyl)pyrazine-2,3-dicarbonitrile, 5,6-bis((2,6-dimethylphenyl)sulfanyl)pyrazine-2,3-dicarbonitrile and 5,6-bis-((2,6-diisopropylphenyl)sulfanyl)pyrazine-2,3-dicarbonitrile. These precursors were prepared by nucleophilic substitution of 5,6-dichloropyrazine-2,3-dicarbonitrile with commercially available thiophenol and 2,6-dimethylbenzenthiol or synthesized 2,6-diisopropylbenzentiol.The latter one had to be prepared by the Newman-Kwart rearrangement. Several cyclotetramerization methods were compared resulting thus in magnesium, zinc and metal free AzaPcs. Properties of prepared AzaPcs were also studied and compared (solubility, UV/VIS, fluorescence). Theoretical part deals with photodynamic therapy and the types of photosensitizers. The possible synthetic pathways giving thiols are presented in the methodology section.