

## ABSTRACT

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Title of Thesis **Synthesis of 3,6-bis(dialkylamino)substituted phthalonitriles**

Phthalonitriles are used as precursors for the synthesis of phthalocyanines (Pc). Pc are planar macrocyclic compounds with unique absorption and photophysical properties, for which they are used in many different fields. Capability to absorb light in range 630-800 nm and following production of ROS and singlet oxygen, both fundamental for principle of PDT, is essential for their biological applications. Non-peripheral substitution of Pc core by appropriate substituents was found to assure monomerization of Pc and cause the shift of the absorption band to higher wavelengths. Therefore, the diploma thesis is focused on the synthesis of phthalonitriles substituted in 3,6 positions by alkylamines, that are potentially suitable for the cyclotetramerization to the final non-peripherally substituted Pcs.

Synthesis of required precursor was carried out in several different pathways. In the first case, nucleophilic substitutions of phthalonitriles derivatives 3,6-disubstituted with good leaving groups (Tos, Tf) were performed. Thereafter, an attempt of halogenation of phthalonitrile, which would be followed by the substitution of halogen for alkylamine, was tried. Another approach included introduction of nitro groups into molecule, which would provide an intermediate for diazotization. However, none of these methods was successful. Consequently, a phthalic anhydride was used as a starting material and 4,7-dibromoisindolin-1,3-dione was obtained after two steps procedure. This compound seems to be promising intermediate for required alkylaminosubstituted precursor of Pc.