

# Abstract

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Name of the thesis: Synthesis of BODIPY dyes for photodynamic therapy

Boron-dipyromethene dyes (BODIPYs) have been used since the 1990s for their photostability, high absorption coefficients and fluorescence quantum yields. Recently, a modification of the structure using the heavy atom effect was discovered, where high quantum yields of singlet oxygen were also achieved. This fact helped creating a family of compounds with the potential for use in photodynamic therapy (PDT). Previously described BODIPY preparations for PDT are limited by poor solubility in polar environments. This study provides an overview of current synthetic options and basic structure-effect relationships. In the experimental part of the work, three styryl disubstituted substances were prepared with  $\lambda_{\max}$  (absorption maximum) at wavelengths in near infrared region with good quantum yields of singlet oxygen and very good photostability. In addition to the target compounds, three 3,5-dialkoxy substituted benzaldehyde derivatives were prepared and characterized as precursors for the final compounds. Finally, the already published synthetic processes were optimized for the preparation of distyryl-BODIPY.