

ABSTRACT

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department **Department od Biophysics and Physical Chemistry**

Student **Zuzana Paušimová**

Supervisor **doc. PharmDr. Veronika Nováková Ph.D.**

Title of thesis **The Effect of Bulkiness of Non-peripheral Substituents
of Phthalocyanines on their Absorption and Photophysical
Properties**

Phthalocyanines are planar macrocyclic compounds which absorb the light over 670 nm due to their large system of conjugated double bonds. Peripheral substitution of phthalocyanines significantly affects the position of the main absorption band. Absorption at longer wavelengths is highly advantageous in any biological applications because such light does not interfere with endogenous chromophores. It was discovered that the desired red-shift of absorption band is much more pronounced at non-peripherally substituted phthalocyanines. However, it was recently found out that the presence of bulky non-peripheral substituent shifts significantly absorption maximum back to lower wavelengths.

The aim of this study was to explain this phenomenon more in detail. For this purpose, a series of phthalocyanines bearing non-peripheral (alkyl- or arylsulphonyl) substituents of different bulkiness was prepared. Syntheses included nucleophilic substitution leading to appropriate precursors, followed by cyclotetramerization with alcoxide as the initiator of the reaction. The final zinc phthalocyanines were further studied from the absorption and photophysical point of view.