A B S T R A C T

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Title of Thesis: Synthesis of Zinc (II) Aryloxy Tetraquinoxalinoporphyrazines

The aim of my master thesis was synthesis of tetra[6,7]quinoxalinoporhyrazine derivative (TQP). Advantage of TQP is bathochromic shift when compared to azaphthalocyanines (AzaPc), which is more appropriate for PDT. AzaPc and TQP derivatives are large planar and conjugated systems, which tend to form aggregates. The aggregation is unfavorable property of TQP derivatives that reduces the singlet oxygen quantum yield. The most effective strategy to increase the ratio monomer/aggregates involves the use of bulky substituents attached to the TQP periphery. That is the reason why I focused on synthesis of 2,3,11,12,20,21,29,30-octa(2,6-diisopropyphenoxy)-tetra [6,7]qinoxalinoporphyrazinato zinc(II). Alkoxides cannot be used for cycloteramerization of aryloxy derivatives due to the well-described transetherification problems. As was shown in my diploma thesis the best way to synthesis of aryloxy derivatives of AzaPc is reaction with $Zn(quinoline)_2Cl_2$ in a melt. That is why this method was applied also for TQP derivatives. Kinetic of this reaction and the influence of temperature is described. Preparation of precursors was also studied. The basic building block for TQP is 2,3-dichloroquinoxaline-6,7-dicarbonitrile, which undergoes simple nucleophilic substitution and thus is an excellent substrate for the syntheses of various TQP precursors. There are two ways how to prepare 2,3-bis(2,6-diisopropylphenoxy)quinoxaline-6,7-dicarbonitrile described in this thesis. The first one involves addition of 2,6-diisopropylphenol into suspension of 2,3-dichloroquinoxaline-6,7-dicarbonitrile and K_2CO_3 in THF. In the other reaction 2,6-diisopropylphenol was added to water solution of NaOH and the mixture was dropped portionwise into a THF suspension of 2,3-dichlorquinoxaline-6,7-dicarbonitrile. The second reaction was found more effective.