

ABSTRACT

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Title of Thesis: Synthesis of substituted quinoxaline-2,3-dicarbonitriles as precursors of potentially photodynamic compounds

In my thesis, I dealt with synthesis of quinoxaline-2,3-dicarbonitrils as precursors for synthesis tetra(2,3-quinoxaline)porphyrazines. These porphyrazines are generally prepared by tetramerization of aromatic dicarbonitriles and show good photodynamic properties. My work was to investigate the most suitable procedures for the synthesis of 6,7-bis(*tert*-butylsulfanyl)-quinoxaline-2,3-dicarbonitril.

In the first method of preparation, I intended to use the suitable reactivity of 5,6-dibromo-2*H*-benzimidazol-2-spirocyclohexane. It was prepared from 4,5-dibromophenylene-1,2-diamine by reaction with cyclohexanone following by oxidation by manganese dioxide. Unfortunately, the introduction of alkylsulfanyl group was shown to proceed by reaction mechanism than we supposed.

In the second method, the corresponding *o*-phenylenediamine reacted with diiminosuccinonitrile in trifluoroacetic acid to form 6,7-dibromoquinoxaline-2,3-dicarbonitril. Unfortunately, a hardly separable mixture of products occurred after the subsequent reaction of 6,7-dibromoquinoxaline-2,3-dicarbonitril with alkylthiolate. This reaction seems to be the only possibility of preparation of the desired 6,7-bis(*tert*-butylsulfanyl)-quinoxaline-2,3-dicarbonitril so far, but there is still a lot of work with preparation, isolation and optimization of reaction conditions.