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Diploma thesis: **Synthesis of precursors for tetra(2,3-quinoxalino)porphyrazines**

ABSTRACT

The curative effect of photodynamic therapy is a result of three elements – photosensitiser, oxygen and light. Photosensitiser must be activated by light, different photosensitisers are activated at various wavelengths. Azaphthalocyanines absorb at longer wavelengths. Some of them can be prepared by cyclotetramerization of substituted quinoxaline-2,3-dicarbonitrils. Preparation of 6,7-bis(*tert*-butylthio)quinoxaline-2,3-dicarbonitril consists of five steps. In the first step, polarity of 2*H*-bezimidazole is inverted (prepared by condensation of *ortho*-phenylenediamine with spirocyclohexanone), by process of "umpolung". As a consequence, it is possible to add nucleophile on aromatic ring. In the second step, sodium-1,1-dimethylethanthiolate reacts with 2*H*-benzimidazole-2-spirocyclohexane and the mixture of four products arises. Only 5,6-bis(*tert*-butylthio)-2*H*-benzimidazole-2-spirocyclohexane is important for synthesis 6,7-bis(*tert*-butylthio)quinoxaline-2,3-dicarbonitril. I focused in my work on optimisation of this reaction to obtain higher yields of this product. Attempts to synthesize of 6,7-bis(*tert*-butylthio)quinoxaline -2,3-dicarbonitril were also performed.

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