

Synthesis of unsymmetrical derivatives of azaphthalocyanines III.

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Phthalocyanine (Pc) derivatives and their analogues (e. g. AzaPc - azaanalogues of Pc with some carbons in their macrocyclic system replaced by nitrogens) are group of compounds, which are used as photosensitizers for photodynamic therapy (PDT). Pc can generate reactive oxygen species (such as singlet oxygen) after light absorption in the red visible region. Therefore they are used in treatment of various kind of cancer. The effort of recent research is to synthesize such molecule that could have a high efficiency in singlet oxygen production and simultaneously a low occurrence of side effects (e.g. aggregation).

Different zinc azaphthalocyanines (AzaPc) were prepared using a statistical condensation starting from two precursors - 5,6-bis(*tert*-butylsulfanyl)pyrazine-2,3-dicarbonitrile (A) and 2,3-dicyano-5,6-dibutoxycarbonylpyrazine (B). Four unsymmetrical molecules (AAAB, ABAB, AABB, ABBB) were isolated by column chromatography on silica from the mixture of six possible products. For simplification, the symmetrical substances were not separated from the mixture. One of the latter mentioned (BBBB) was prepared by its own condensation of one precursor. All prepared substances were characterized by NMR, IR, MS, UV-VIS spectroscopy.