



## New phthalocyanine and azaphthalocyanine derivatives

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### INTRODUCTION

Phthalocyanines (Pcs) and azaphthalocyanines (AzaPcs) are analogues of porphyrin dyes where methine groups in bridge are replaced within nitrogens.<sup>1</sup> Due to their promising spectral, photochemical, photophysical, and electrochemical properties, they are investigated for example as sensors, photosensitizers in photodynamic therapy or quenchers of fluorescence. Different cations coordinated in the center as well as different peripheral substitution of Pc and AzaPc influence significantly final spectral and photophysical properties.

### RESULTS AND DISCUSSION

Cobalt is not typical central atom in Pcs and AzaPcs. Thus, we prepared new Pc **2a** and AzaPc **2b** containing Co in the cavity and bearing *t*-butylsulfanyl groups on periphery (Figure 1). These macrocycles were prepared by cyclotetramerization of precursors **1a**, **1b**. Magnesium Pc and AzaPc were converted to the metal-free derivatives under acid conditions. Metal-free Pc and AzaPc reacted with anhydrous cobalt acetate to form cobalt complexes.

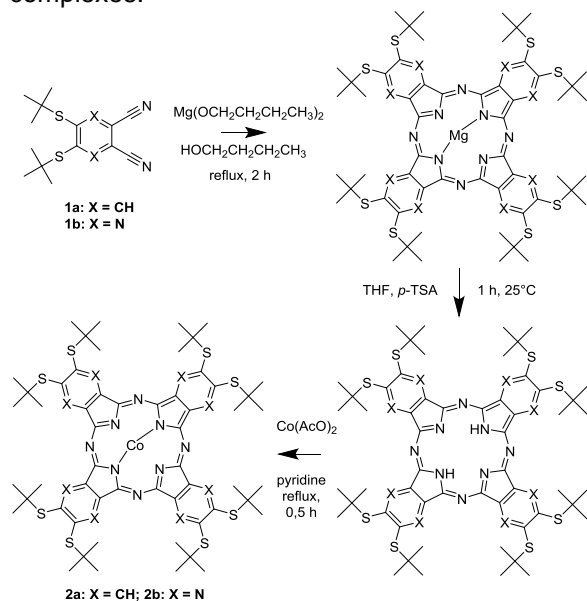


Figure 1. Synthesis of Co complexes of Pc and AzaPc

Preparation of water soluble zinc AzaPc **3** with quarternary ammonium groups on periphery (Figure 2) will be discussed in the second part of the work. Condition of synthesis and photodynamic activity on cancer cells will be also presented.

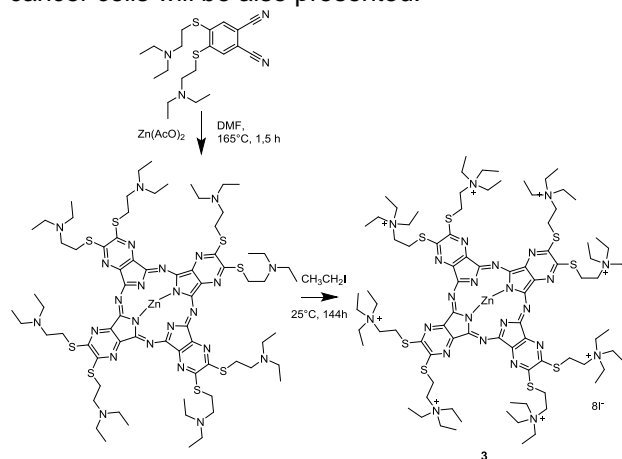


Figure 2. Synthesis of water soluble zinc AzaPc **3** containing quarternary ammonium groups on periphery.

### CONCLUSION

New phthalocyanine and azaphthalocyanines coordinating Co in the central cavity and bearing *t*-butylsulfanyl groups on periphery were prepared and studied. Water soluble zinc AzaPc with quarternary ammonium groups on periphery were synthesized and photodynamic activity on cancer cells studied.

### ACKNOWLEDGEMENTS

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### REFERENCES

<sup>1</sup> Kostka, M.; Zimcik, P.; Miletin M.; Klemra, P.; Kopecky K.; Musil, Z. *Journal of Photochemistry and Photobiology A-Chemistry*. **2006**, *178*, 16.