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Title of the diploma thesis: Synthesis of magnesium(II) azaphthalocyanines as potential fluorophores

Azaphthalocyanines are macrocyclic compounds, which can exist with or without central metal (i.e. metal-free). Central metal can be chosen from a wide range of cations leading to significant changes in photophysical and photochemical properties of the macrocycle. My work is focused on magnesium complexes because of their significant fluorescence.

Magnesium azaphthalocyanines are generally synthesized by cyclotetramerization reaction with magnesium butoxide. However, some azaphthalocyanines may contain labile peripheral substituents that may be cleaved in butoxides or in the case of unsymmetrical azaphthalocyanines the separation must be performed in a metal-free form. For these reasons, my work concerns with direct magnesium insertion into already prepared azaphthalocyanine macrocycle.

I investigated possibilities of direct magnesium insertion with different kinds of magnesium salts, in different solvents, under different dryness of solvent, different temperature and different peripheral substitution of the macrocycle. The optimal conditions involve reflux in pyridine with magnesium acetate. Moisture is not playing any important role. Under these conditions a number of differently substituted phthalocyanines and azaphthalocyanines can complex magnesium cations.