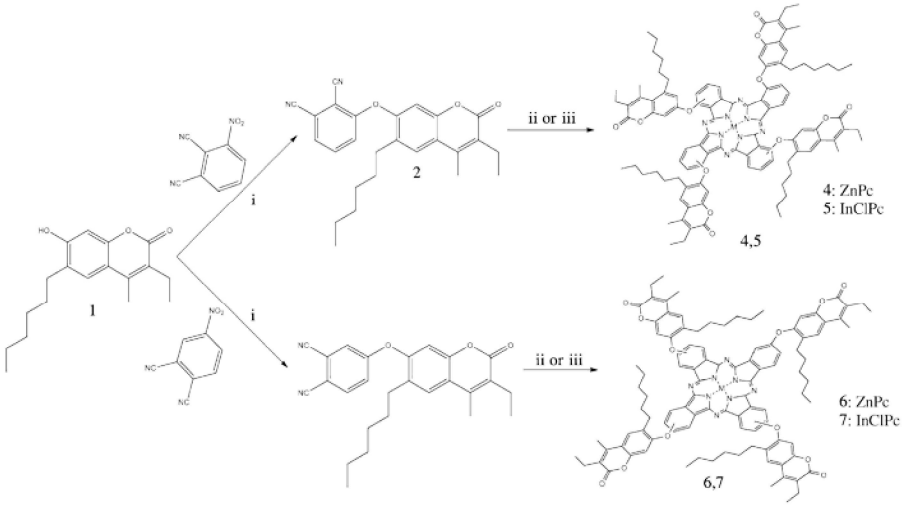


Zinc(II) And Chloroindium(III) Phthalocyani Bearing 7-oxy-3-ethyl-4-methyl-6-hexylcoumarin Groups: Synthesis Characterizat and Investigation of The Photophysicochemical Properties

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New 7-hydroxy-3-ethyl-4-methyl-6-hexylcoumarin (**1**) its phthalonitrile derivatives, 3-[7-oxy-3-ethyl-4-methyl-6-hexylcoumarin]phthalonitrile (**2**), 4-[7-oxy-3-ethyl-4-methyl-6-hexylcoumarin]phthalonitrile (**3**), have been prepared. The phthalonitrile derivatives (**2, 3**) were converted to their peripheral tetra, non-peripheral tetra 7-oxy-3-ethyl-4-methyl-6-hexylcoumarin substituted zinc(II) and chloroindium phthalocyanine derivatives. All novel compounds were characterized by elemental analysis, FT-IR, ^{1}H-NMR, MALDI-TOF mass spectrometry and UV-vis spectral data. Additionally, the spectral, photophysical (fluorescence quantum yields and lifetimes) and photochemical (singlet oxygen generation and photodegradation under light irradiation) properties of the resulting (phthalocyaninato)zinc(II) and indium(III) chloride complexes (**4–8**) were investigated in DMF. The obtained results were compared for determination of the effects of the substituents' positions and the variety of the central metal atom on these properties. The fluorescence quenching behavior of these phthalocyanines (**4–8**) were also investigated using 1,4-benzoquinone as a quencher. The obtained pcs showed excellent solubility in most organic solvents. They may produce high singlet-oxygen and show appropriate photodegradation which is very important for photodynamic therapy applications.



Scheme 1. Synthesis of tetra-[7-oxy-3-ethyl-4-methyl-6-hexylcoumarin]-substituted metal phthalocyanine complexes (M = Zn, InCl). i) DMF, K_2CO_3, room temperature; ii) DMAE, Metal salts, 160 ^oC; iii) DMF, Metal salts, 160 ^oC.

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