

MOLDOVA STATE UNIVERSITY

Scientific Research Laboratory

Organic / Inorganic Materials in Optoelectronics

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HR EXCELLENCE IN RESEARCH

Metal Phthalocyanine Photosensitive Polymers

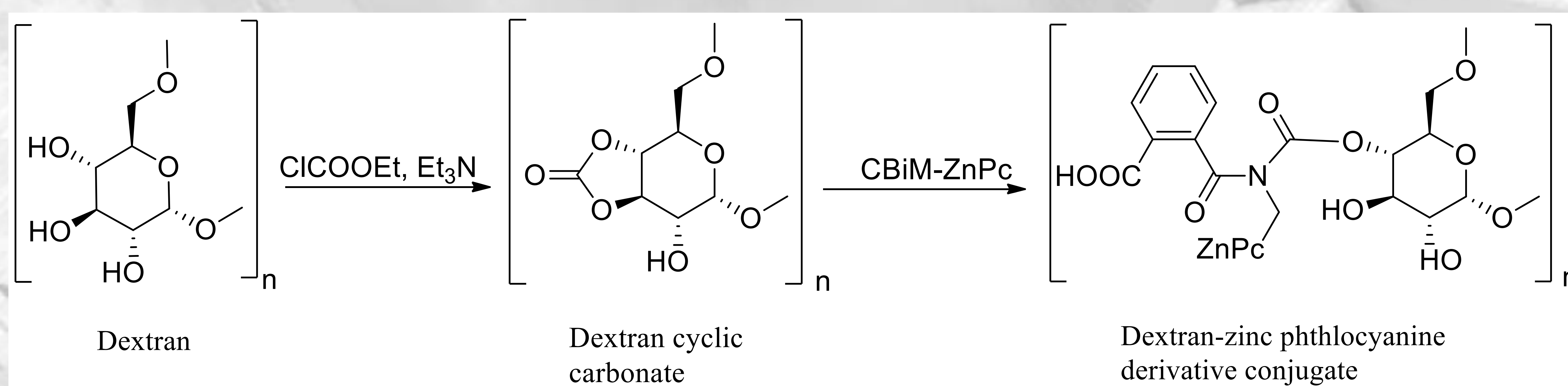
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Compartment IV: Innovative products and services

AIM: Development of a near infrared photosensitizer based on mono-substituted o-carboxybenzamidomethyl ZnPc and dextran for photodynamic therapy.

SOLUTION: The polymer-metal phthalocyanine compounds represent a new generation of photosensitizers due to the expansion of the spectral range of these materials in the near infrared range. For synthesis of mono-substituted zinc phthalocyanine (ZnPc) derivative, substituted phthalimide and paraformaldehyde of zinc phthalocyanine is stirred into 70 parts of 100% sulfuric acid at a temperature of 55 °C. When solution is completed, the bis-phthalimidomethyl ether is added. The reaction is completed by heating to 80°C and after that, the solution is immersed in ice-water. The product is washed in acid free solution, stirred in acetone and filtered. A dark blue powder of 70% yield of mono-substituted o-carboxybenzamidomethyl ZnPc (CBIM-ZnPc) is synthesized. Mono-substituted o-carboxybenzamidomethyl ZnPc is conjugated to dextran via Friedel-Crafts reaction.



ADVANTAGES: The elaborated dextran-CBIM-ZnPc exhibit water solubility, absorbance at 752 nm and the relatively long-lived triplet excited states with lifetime of around 20 μ s.

IMPLEMENTATION STAGE: At the laboratory level.

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