

Solvent Free Synthesis of New Phthalocyanine Derivatives and Characterization by Spectroscopic Techniques

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Presentation/Paper Type: Oral / Abstract

Abstract- Phthalocyanines (Pcs) have many uses in advanced technology. In recent years, the applications of MPc complexes have expanded to fields such as photodynamic therapy (PDT) photodetectors, photoconductive agents in photocopiers, and electrocatalysts, but these complexes have others different application areas[1, 2]. Phthalocyanines exhibit exceptional thermal and chemical stability, and only strong acids act on MPc complexes. The solubility of MPc complexes is increased by linking functional groups to the main ring of the Pc. In particular, molecules that carry groups such as carboxylic acid or sulfonic acid to form water-soluble Pc are linked to the Pc ring [3]. However, the solvents used during the synthesis of these molecules are often toxic and boiling points are high. Therefore, alternative synthesis methods are required.

In this study, the phthalocyanine derivatives given the synthesis method below (Figure 1) were synthesized in the solvent free medium. The reaction was carried out at 200 °C and 16 hours using the catalyst. The resulting Pc derivatives were characterized using spectroscopic techniques such as FTIR, UV-vis., NMR and MALDI TOF MS. As a result, the synthesis of this molecule has been successfully accomplished without solvent.

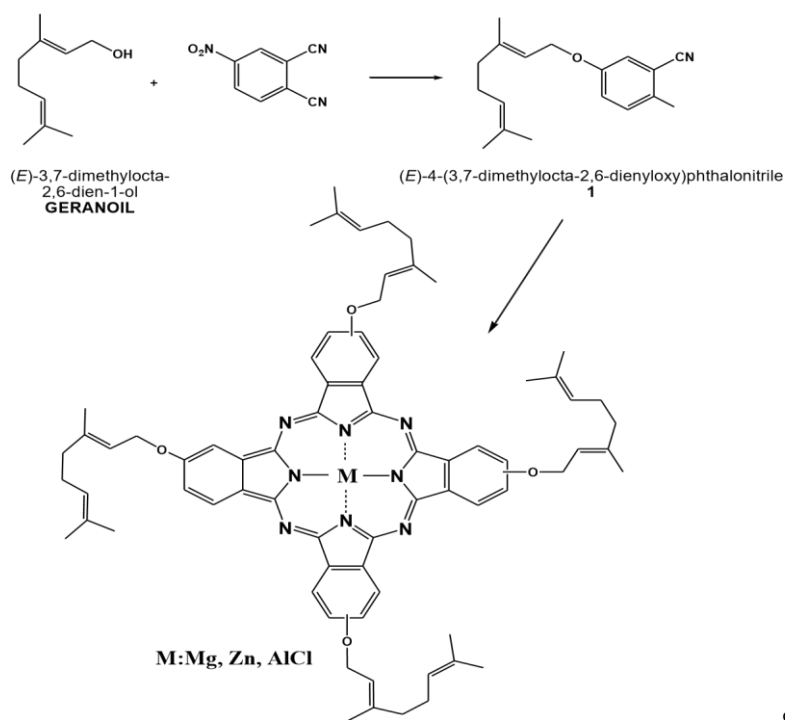


Figure 1. Synthesis method of new phthalocyanine derivatives

Keywords- Phthalocyanines, synthesis, characterization.

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