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The Preparation, Characterization and the Study of Thermal Properties to Some Co-Phthalocyanine Polymers Derivative from Epichlorohydrine and Dichlorodimethyl Silane

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Abstract

A novel class of polymer containing the metallophthalocyanine ring [MPc, M= Co(II)] in the chain was synthesized by polycondensation of 4.4',4",4"'-tetraminophthalocyanato cobalt (II) with epichlorohydrine and dichlorodimethyl silane by [1:2] mole ratio (MPc: Epichlorohydrine or dichlorodimethyl silane). The structures of the polymers were characterized by FTIR, U.V-Visible spectrophotometry, and X-ray diffraction. The thermal stabilities of the polymers were evaluated by dynamic thermo gravimetric analysis (TG) and diffraction scanning calorimetric (DSC).

Keywords: cobalt phthalocyanine polymer; thermal stability phthalocyanine polymer.

1. Introduction

Phthalocyanines are one of the most studied classes of organic functional materials with high potential in electrooptics. Due to their 18-p electron macrocyclic aromatic system, closely related to that of the naturally occurring porphyrin ring, and relative facile tailoring of molecular structure by chemical modification, they found numerous commercial applications, among others: photoconductors in xerography [1], optical data storage [2], solar energy conversion [3], electrochromic and electroluminescent displays [4].

Phthalocyanine (Pc) polymers have various functions, for example, stacked polyphthalocyanines for electroconductors [5], copolymerized phthalocyanine polymers for organic photoconductors [6], thermally stable polymers containing metallophthalocyanines [7] and so on, have already been prepared.