

## **CHARACTERIZATION OF ZnPc-CdS COMPOSITE THIN FILMS FOR PHOTOVOLTAIC Applications**

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Organic-inorganic complex structures are expected to open new areas of research in optoelectronic materials by utilizing the specific light absorption or nonlinear optical properties of organic molecules and the high carrier mobility or physical strength of the inorganic materials in one system. Photophysical and photochemical properties of MetalPhthalocyanines (MPc) have been extensively studied in the last two decades, mainly due to the possible application in the solar energy conversion and phototherapy of cancer. Among the available MetalPhthalocyanines, ZincPhthalocyanine (ZnPc) is a one of the suitable candidate for making solar cells and is used as an active layer in the thin film solar cells. CdS thin films have been the subject of intensive research because of its intermediate band-gap, high-absorption coefficient, electron affinity, low resistivity, easy ohmic contact and finally the structure. The ZnPc/CdS interface has an important role in this system, since the photogenerated electrons in the ZnPc layers transfer to the conduction band of Cadmium Selenide through the interface between two materials. In this paper we have reported the optical properties of ZnPc –CdS composite thin films. The composite layers were prepared by the vacuum evaporation. The films were prepared under the vacuum of  $10^{-6}$  Torr. The transmittance and absorbance spectra were recorded in the wavelength range 300-2500 nm using JASCO V-570 Spectrophotometer. The photovoltaic properties were carried out in the visible region using suitable masks. The photoconduction properties of the single layer of ZnPc and CdS thin films have been reported and the results were discussed in this paper.