



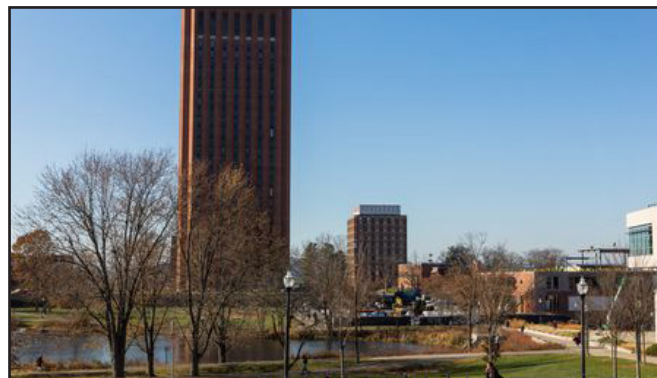
Self-Assembled MePc:perylene diimide supramolecular systems in solution for photovoltaic applications

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Abstract:

Metal phthalocyanines, and perylenes are compounds with great potential for serving as components of molecular materials that possess unique electronic and photo-physical properties. The present study investigated the synthesis and characterization of the device based on ZnPc and N, N'-bis (3-pentyl) perylene-3,4,9,10-bis (dicarboximide) (Di3Pentyl-PTCDI). For the preparation of a donor-acceptor molecule from chemical solution, Di3Pentyl-PTCDI and ZnPc powders were separately dissolved. ZnPc 1.0 mg/L and Di3Pentyl-PTCDI 1.0 mg/L were each solubilized in formic acid. Both ZnPc and Di3Pentyl-PTCDI solutions were sonicated for 1 hour and then were mixed in the different weight ratios. Device structure of bulk ZnPc:Di3Pentyl-PTCDI photovoltaic device and molecular structures of components are shown in image. The structure and optical properties of the ZnPc:Di3Pentyl-PTCDI blend thin films obtained by spin coating were analysed by Jasco X-ray Ultima III advanced diffractometer, Raman spectroscopy and UV-VIS spectroscopy. The current density-voltage (J-V) characteristics were measured under an intensity of 100 mW/cm². External quantum efficiency (EQE) was measured at varying wavelengths (300- 1000) nm) with an interval of 10 nm. XRD analysis show that the formic acid affects the crystalline structure of the ZnPc, but not of Di3Pentyl-PTCDI. Absorption spectra of the ZnPc:Di3Pentyl-PTCDI blend thin films show representative phthalocyanine B and Q bands with well-defined intensive peaks of the Di3Pentyl-PTCDI that demonstrate the formation of



a supramolecular architecture by the self-assembly of ZnPc and Di3Pentyl-PTCDI.

Biography:

Potlog T. has completed her PhD at the age of 31 years from Khisinev State University, Republic of Moldova. She is the Head of Organic/Inorganic Materials for Optoelectronics Laboratory, Moldova State University. She has published more than 195 papers in reputed journals and conference proceedings.

Recent Publications:

- Potlog T, Am J Clin Nutr, 2009
- Potlog T, J Chromatogr B Analyt Technol Biomed Life Sci. 2007
- Potlog T, Przegl Lek, 2001.
- Potlog T Rocz Panstw Zakl Hig. 1994
- Potlog T, Rocz Panstw Zakl Hig, 1991.

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