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Synthesis of Organic Phosphor Materials for Display Devices

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Abstract: *An organic light emitting diode (OLED) also known as organic electroluminescent diode is a display device like light emitting diode in which an emissive electroluminescent layer is a film of organic compound material that emits light in response to an electric current. This organic layer is situated in between two electrodes; typically at least one of these electrodes is transparent. The organic molecules have conductivity levels ranging from insulators to conductors, and are therefore considered as organic semiconductors. Organic semiconductors were synthesised byone of the method known as the method of Friedlander condensation reaction. Originally, the basic polymer synthesised organic material is group of Diphenylquinoline (DPQ) family which consisted of a single organic layer for OLED. The family members of DPQ were synthesised by bonding chlorine- methyl, bromine, methyl, methoxy, P- hydroxyl, P-Acetyl-biphenyl and P- Acetyl bi-chlorine to the original structure of DPQ at various positions. All the synthesised polymers show crystalline in nature and emits blue colour under UV in various acidic as well as basic solvents like acidic acid, formic acid, chloroform, dichloromethane, tetrahydrofuran etc. The synthesised phosphors were characterised by different techniques to study physical, optical and chemical properties such as Fourier Transform infra-red (FTIR), UV- Visible absorption and photoluminescence spectra, X-Ray diffraction spectra (X-RD), Thermo gravimetric analysis (TGA) and Differential thermal analysis (DTA). All The blue emitting organic phosphors has generated considerable interest owing to their good photoluminescence efficiencies.*

Keywords: OLED's, Solid State Lighting, Friedlander Condensation Reaction, Organic Phosphors.

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