Sym. D : Display Materials

ORGANIC ELD TECHNOLOGIES

B-TUE-02

AN OVERVIEW OF THE DISPLAY TECHNOLOGY, You Song Kim (Dept. of Materials Science and Engineering, POSTECH, Pohang 790-784, Korea)

Recent display technology is reviewed with an emphasis of future challenge in the information technology. Display technology has been rapidly evolved in order to meet the increasing needs for sophisticated information technology. It is strongly evidenced by the fact that in the information industry, both big size and higher performance of the displays are major issue as well as its impact on the future challenge in the display technology. There are several display technologies such as CRT, CDT, LCD, PDP, and others. The recent market for display devices in multimedia industry is estimated to be ~$2 billion, of which CRT occupies approximately 60%. Recent trend of the display features revealed that Flat Panel Display (FPD) is practically attractive for meeting future needs which cover a wide range of displays such as Plasma Display Panel (PDP), Elecltro-Luminescence Display (ELD), Field Emission Display (FED), and Liquid Crystal Display (LCD). It is attempted to update the progress on FDP, especially FED and LCD in Korea.

B-TUE-03

FABRICATION AND CHARACTERISTICS OF PPV LIGHT EMITTING DIODE

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The interests in the Light Emitting Diodes using the conductive polymers are increasing these days. PPV copolymer was synthesized and employed in the fabrication of the Organic yellowish-green Light Emitting Diode as the electron transport and yellowish-green light emitting layers. The PPV was spin-coated on the cleaned glass/ITO layer followed by a vacuum annealing for 20 hrs. The thickness of the PPV layer was controlled by the speed and time of the spinning. The cathode electrodes of Al and Ca with different Thickness were deposited under the vacuum of 1×10^{-7} Torr. The synthesized PPV copolymer was characterized using NMR and FT-IR.The current-voltage characteristics of the PPV layer and the variation of the electrode. It was found out that the threshold voltage of the device is strongly dependent on the characteristics of the employed cathode electrode ; about 12 V for the Al electrode and 3 V for the Ca electrode in the device with the thickness of PPV about 1000 Å. The threshold voltage was reduced with decreasing the thickness of the PPV layer. In this paper, noble processing methods for the fabrication of the high efficient OLEDs and their characteristics are discussed.

B-TUE-04

PHOTOLUMINESCENT AND ELECTROLUMINESCENT CHARACTERISTICS OF THIN FILMS OF TERBIUM COMPLEXES WITH VARIOUS LIGAND PREPARED BY VACUUM EVAPORATION METHOD, SANG W. PYO, M. H. LEE, H. S. LEE, J. S. KIM(Dept. of Electrical & Electroic Eng, Hongik Univ., Seoul 121-791, Korea), Y. K. KIM(Dept. of Chem. Eng., Hongik Univ., Seoul, 121-791, Korea) and S. H. LEE(Dept. of Industrial Chem., Hongik Univ., Seoul, 121-791, Korea)

Electroluminescent(EL) devices based on organic materials have been of great interest due to their possible applications for large area flat-panel display, where they are attractive because of their capability of multicolor emission, and low operation voltage.

In this study, several Tb complexes such as $Tb(ACAC)_3(Phen)$, Tb(ACAC)(Phen-Cl), $Tb(DBM)_3(Phen)$, and $Tb(DBM)_3(Phen\text{-}Cl)$ were synthesized and the PL and EL characteristics of their thin films were investigated by fabricating the devices having a structure of ITO/TPD/Terbium complex/AlQ_3/Al, where where TPD, and AlQ_3 films were used as an hole and electron transporting materials, respectively. It was found that the PL and EL characteristics of these Terbium complexes were dependent upon the ligands coordinated to Terbium metal.

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B-TUE-05

COMPARISON OF ELECTRICAL CHARACTERISTICS BETWEEN α-SEXITHIOPHENE AND PENTACENE THIN FILMS WITH VARIOUS METAL ELECTRODE, SE-WOON OH, D. Y. KIM, J. S., CHOI(Dept. of Electrical & Electroic Eng, Hongik Univ., Seoul 121-791, Korea), and O. K KWON, Y. K. KIM, D. M. SHIN(Dept. of Chem. Eng., Hongik Univ., Seoul, 121-791, Korea)

Organic thin films based on conjugated oligomers have the potential for application to electronic and optoelectronic devices such as Thin Film Field-Effect Transistors and Light Emitting Diodes, as an active layer.

In this study, thin films of α-sexithiophene and pentacene were deposited on the lithographically patterned metal electrode at room temperature using OMBD method, where the thickness, depo. rate, and depo. pressure was 150nm, 0.2-0.3nm/sec, and 2×10^{-8}Torr, respectively. Electrical conductivity of these films with a direction parallel to the substrate, and contact resistance were investigated with various metal electrode such as Al, In, Ag, Cr, and Au. It was found that the electrical conductivity, and contact resistance of α-sexithiophene was about 10^{-5}S/cm, and $0.1G\Omega$, respectively. Details on the dependance of these properties of α-sexithiophene and pentacene films on metal electrode will be discussed.

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