WEDNESDAY

Sym. I : Polymers for Electronics
LED - Ⅲ

C-WED-06
POLARIZED EMISSION FROM LIQUID CRYSTALLINE PPV DERIVATIVE, D.H. HWANG, L.M. DO, H.Y. CHU, T. ZYUNG (Research Dept. ETRI, Taejon, 305-350, Korea), C.J. LEE (KRICT, P.O. Box 107, Yusong, Taejon, Korea), A.B. HOLMES (Dept. of Chemistry, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, UK), H.K. SHIM (Dept. of Chemistry, KAIST, Taejon 305-350, Korea)

Silyl-substituted solvent processible poly(p-phenylene -vinylene) (PPV) derivative, poly[bis(2,5-dimethyloctyl -sily)-1,4-phenylenevinylene] (BDMOS-PPV) has been synthesized and light-emitting properties of the polymer have been studied. Synthesized BDMOS-PPV is highly fluorescent and the measured absolute photoluminescence (PL) quantum efficiency is exceeding 60 %. Single and multilayer electroluminescent (EL) devices have been fabricated using BDMOS-PPV as the emissive layer. The light-emission from the devices becomes visible at bias voltage of 6 V in green region. Interestingly BDMOS-PPV shows the liquid crystalline behavior. Polarized PL and EL emission characteristics of BDMOS-PPV have been studied. In this presentation, polarized emission characteristics of BDMOS-PPV will be discussed.

C-WED-07
NEW BLUE ORGANIC ELECTROLUMINESCENT DEVICES BASED ON POLYIMIDE AND ORGANOMETALLIC COMPLEX, Y. KIM(Electronic Materials Lab., IAE, Yongin P.O. Box 25, Kyonggi-Do 449-020, Korea) and J. G. LEE(Electronic Materials Lab., IAE / Dept. of System Eng., Ajou Univ., Suwon 442-800, Korea)

The blue organic electroluminescent device (OELD) was successfully fabricated utilizing the polyimide containing triphenylamine moieties and organometallic complex dye as hole-transporting layer (HTL) and emission layer (EML) with electron transportability, respectively. The polyimide HTL was prepared using both of soluble and insoluble polyimides. The blue organometallic complex dye was newly synthesized and showed strong photoluminescence brighter than that of the well-known Alq3. When a soluble polyimide was introduced as a HTL, the OELD emitted bright blue light with the turn-on voltage of *ca.* 7 V and the peak wavelength of *ca.* 450 nm. The device characteristics with the various polyimide HTL and the thickness of the organometallic complex dye will be discussed in detail.

Sym. B : Compound Semiconductors for Electronic & Photonic Devices
LOW DIMENSIONAL STRUCTURES- I

D-WED-01
MOCVD Multiwafer Technology for Mass Production Application, H. Protzmann, D. Schmitz, G. Strauch, M. Heuken and H. Juergensen (AIXTRON AG, Kackertstr. 15-17, D-52072 Aachen, Germany)

Heterostructures of compound semiconductors are more and more important for the rapidly increasing market of high quality photonics, optoelectronics, high speed and high temperature electronics.The corresponding technology is demanding very flexible large scale production systems for the growth of standard III/V materials as well as group III nitrides. The AIX 2600G3 system with inductive heating system which allows rapid heating and cooling cycles offers the possibility to use the 7×2", 5×4" or 9×4" configuration, by using the same reactor. Combined with an automatic hot wafer loading system and in situ reactor etching by HCl we have an very flexible tool for the mass production of the most important device structures.. The material uniformity of AlGaAs and (Al)GaInP on 9×4" as well as those of (Al)(In)GaN on 7×2" is excellent.. The standard deviation in emission wavelength of GaAs-based material is within the range of±0.5 nm and better than 0.5% in film thickness. The GaN-based materials show standard deviation in emission wavelength of± 1 nm and better than 2% in film thickness. The sheet resistance distribution of Si and C doping levels for GaAs-based material is lower than 1%. Si- and Mg- doped GaN-based material show sheet resistance uniformities of<2% and <20%, respectively. These numbers are obtained on full wafer mappings. The efficiency for precursors is 45% for TMGa and over 50% for TMAl. All of these results demonstrate the all over flexibility as well as the high efficiency of the AIX 2600G3 system for device mass production. Details of these advantages including the impact on reduction of cost of ownership will be discussed in detail.

D-WED-02
GROWTH of InGaAs/InGaP QUANTUM DOTS FOR LONG WAVELENGTH VCSELs APPLICATION, S. KIM, M. ERDTMANN and M. RAZEGHI (Center for Quantum Devices,Department of Electrical and Computer Engineering, Northwestern University, Evanston, Illinois 60208)

We report growth of InGaAs quantum dolts embedded in InGaP matrix for long wavelenth (λ > 1.3 μm) vertical cavity surface emitting laser diodes (VCSELs) by low-pressure metalorganic chemical vapor deposition. Highly uniform InGaAs quantum dots ware formed in Stranski-krastanow growth mode due to a high strain. Very long wavelength photoluminescence at 1.37 μm was obtained from the double stacked InGaAs quantum dots structure on GaAs substrate at 300K. Its optical properties was investigated at the same time. The electrically pumped light emitting at 1.25 μm was achieved from the fabricated laser struture at room temperature.