제80회 정기총회 프로그램, 논문초록집

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layer on sides of the gate insulator for minimizing leakage current.

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**Ea-P089** Brining characteristics of multiwalled carbon nanotube as a function of electrode material

In this work, the roles played by the electrode materials during the parallel growth process are studied both theoretically and experimentally. The metal (Ti, Nb)-catalyst (Co) electrodes with constant thickness Co layer were prepared to examine on the influence of both bridging density and straightness of lateral grown CNTs. During the rapid thermal growth of CNTs, we applied DC electric field on the electrodes. We show that our approach affords electrical unit element suspended over various pre-patterned substrates.

*This work was supported by Nano Core Technology Project of MOST.

**Ea-P090** Thermal Conductivity and Thermal Diffusivity of Multi-Walled Carbon Nanotube-Reinforced Polypropylene Composites. 김 화성, 김 석현, 이 상현 (울산대학교 물리학과, *한국표준과학연구원*) Since the discovery of carbon nanotubes (CNTs) and the realization of their unique physical properties, including thermal, mechanical, and electrical, many researchers have endeavored to fabricate advanced CNT composites. In this study, the thermal conductivity and the thermal diffusivity of the multi-walled carbon nanotube (MWCNT)-reinforced polypropylene (PP) composites were measured using 3u apparatus in 90-320K and photo-acoustic apparatus at room temperature, respectively. Three kinds of samples were prepared by the melt-blending of PP resins with the addition of not treated, nitric acid (HNO₃) treated, and potassium hydroxide (KOH) treated 1 wt% of nanotube content and compression-molded at 180 °C into 0.1mm thickness composite films using the hot-press. The thermal conductivity is in the range between 3x10⁻² to 5x10⁻³ Wm⁻¹K⁻¹ and decreases as the temperature increases. The values for HNO₃ treated sample are larger than the other samples and the thermal diffusivity shows similar trend. These can be analyzed by the different dispersibility of MWCNT's in the PP resin.

**Ea-P091** 이온주입에 의해 poly(3,4-ethylene-dioxythiophene, PEDOT)의 표면에 형성된 naisoland의 물리적 특성 연구 서 영부, 박 성규, 김 해수, 주 진수 (고려대학교 물리학과) 전도성 고분자인 Poly(3,4-ethylene-dioxythiophene)(PEDOT)에 고에너지 이온주입을 하여 naisoland가 생성되었다. Field Emission Scanning Electron Microscope (FE-SEM)을 이용해 PEDOT film 위에 naisoland가 생성된 것을 확인하였다. Electrostatic Force Microscope (EFM)측정을 통해 naisoland의 표면 전하차를 측정하였다. 또한 이온 dose에 따른 구조적 특성과 결정성 변화를 Raman 측정과 XRD 측정을 통해서 확인하였다. 상온직류 전기저항도와 온도의존성 실험을 통해서 진전도특성을 연구하였다.

**Ea-P092** Temperature Dependent Molecular Conduction Measured by the Electrochemical Deposition of Platinum Electrode 안 세정, 김 비 오, 박 진규, 이 승현, 김 동우, 김 명수, 박 영우 (서울대학교 나노과학기술 협동기구) We made molecular devices in lateral configuration using electrochemical deposition of Pt electrode on top of the 1,4-benzenedithiol (BDT) self-assembled monolayer (SAM). Pt electrodes, which have 100nm gap, were fabricated using conventional e-beam lithography. Then, SAMs were grown on the Pt electrodes and Pt was deposited electrochemically on the one side of pre-patterned electrodes. In this way, metal-molecules-metal structures were constructed. We measured temperature dependent I-V characteristics in the temperature range of 30K<T<300K. Non-Ohmic and asymmetric I-V characteristics were obtained in all temperature region. The temperature dependence of I-V characteristics showed semiconducting behavior above 40K and the temperature dependence was disappeared below 10K.

**Ea-P093** 직경 50nm 길 Polypyrrole 나노 드롭