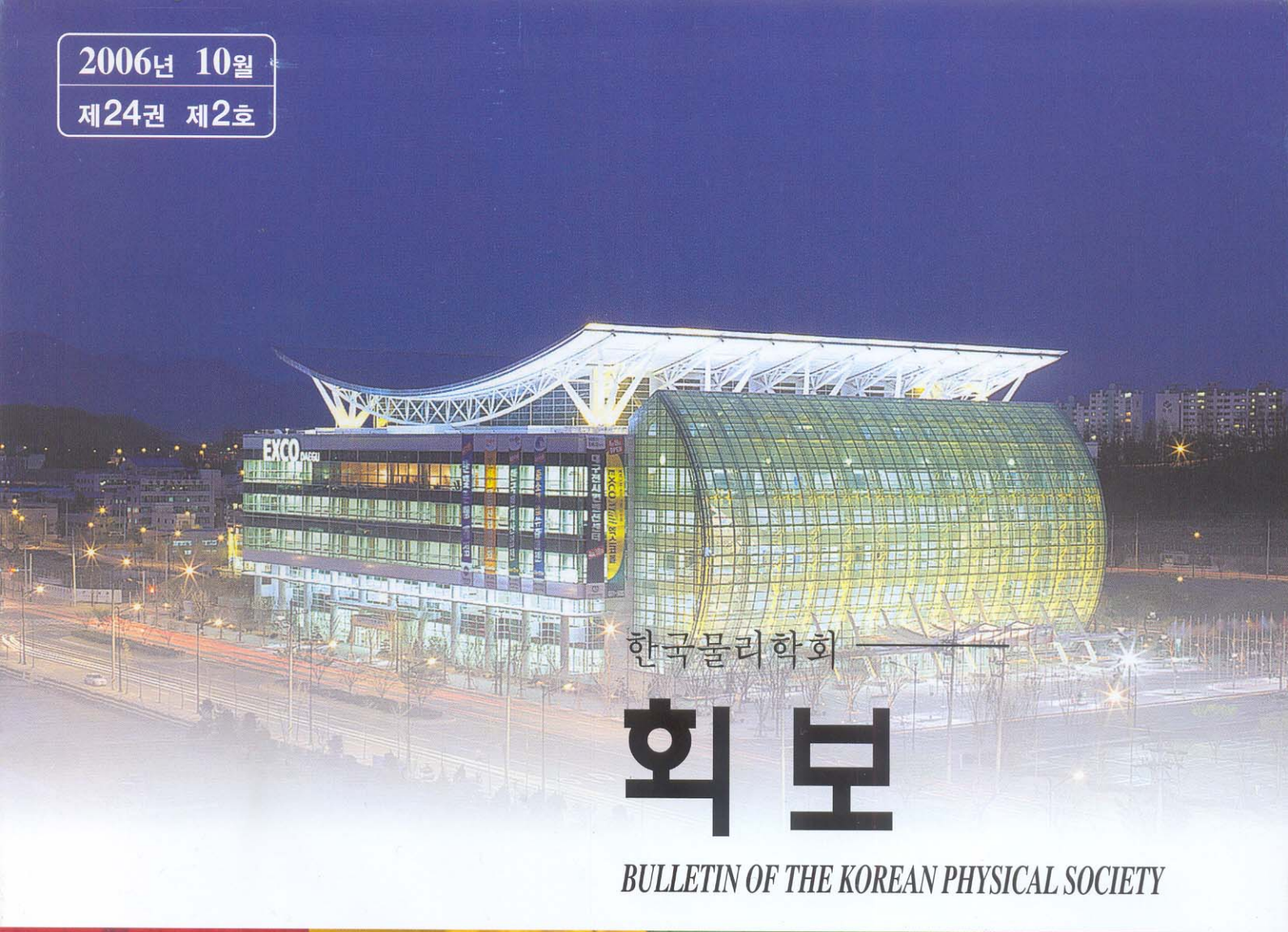
2006년 10월
제24권 제2호



한국물리학회

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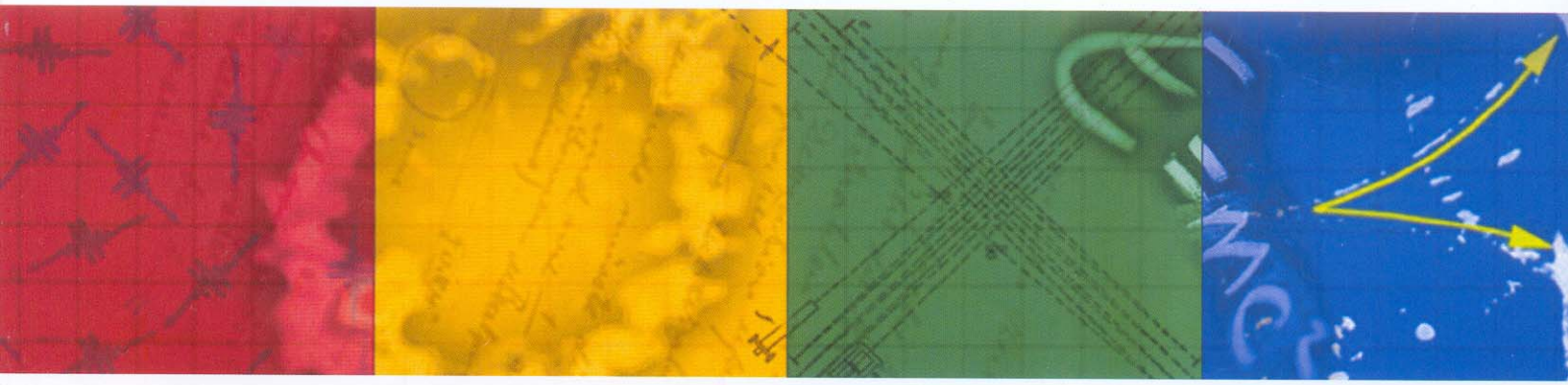

2006년 가을 학술논문발표회 및 임시총회

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HONG Young ki, PARK Dong hyuk, KIM Bo hyun[1], JOO Jinsoo[1](*Department of Physics, Korea University.* [1]*Department of Physics, Kkorea University.*) We fabricated nanoporous anodic aluminum oxide (Al_2O_3) templates with various diameter (20 nm ~ 80 nm) by anodizing aluminum plate in acidic solution. Using these templates and purchased nanoporous templates, π -conjugated polypyrrole (PPy) nanomaterials with various sizes were synthesized through electrochemical polymerization method. From scanning electron microscope and transmission electron microscope photographs, we observed the formation of nanowires with various diameters and obtained relatively long nanowires of PPy (≥ 40 μm in length). To discern the structural, conformational, and optical properties of the π-conjugated polymeric nano-systems, Fourier transform-infrared spectroscopy and ultraviolet-visible absorption spectroscopy were performed. The electrical properties of the π -conjugated polymeric nano-systems were investigated by measuring DC conductivities of conducting PPy nanomaterials using 2-probe and 4-probe patterns. From the experimental data, we discuss about size-dependent characteristics of conducting PPy nanomaterials.

Ep1-018 **Zn_2SiO_4:Mn,Al형광체의 발광특성** 이 지영, 유 일(*동의대학교 물리학과.*) Zn_2SiO_4:Mn에 NH_4Cl와 Al의 농도를 변화시켜 PDP용 녹색 형광체를 고상반응법으로 제조하였다. NH_4Cl과 Al의 농도 변화에 따라 발광세기와 색순도의 변화를 관찰하였다. Zn_2SiO_4:Mn은 상온에서 $^4T_1 \rightarrow {}^6A$ 전이에 의해 녹색 발광이 관찰되었다. Zn_2SiO_4:Mn에 NH_4Cl 15mol% 첨가한 경우, NH_4Cl을 첨가하지 않았을 경우 보다 2~3배 정도의 휘도 상승을 가져왔다. Zn_2SiO_4:Mn에 Al을 첨가시 Zn_2SiO_4에 $ZnAl_2O_4$ 결정이 동시에 존재함으로써 525nm인 일반적인 녹색발광에서 장파장의 황색발광으로 이동함을 관찰하였다.

Ep1-019 **Poly 3-methylthiophene(P3MT) 나노튜브와 Poly 9-vinylcarbazole (PVK) 복합체를 이용하여 제작된 발광 소자의 전기적 광학적 특성** 이 용백, 박 동혁[1], 김 현승[1], 홍 영기[1], 주 진수[1](*고려대학교 물리학과.* [1]*고려대학교물리학과.*) 나노직경을 갖고 있는 Al2O3(다공성 무기 배경물질)를 이용하여 poly 3-methylthiophene(P3MT)을 전기중합방법으로 나노튜브를 합성하였다. HF 혹은 NaOH을 이용하여 배경물질을 제거한 후 전자주사 현미경(SEM)과 투과 전자 현미경(TEM) 실험을 통해서 길이가 약 40 μm 이고, 직경이 100~150 nm인 나노튜브로 중합되었음을 확인하였다. P3MT 나노튜브와 poly 9-vinylcarbazole(PVK)를 이용하여 복합체를 합성하였다. P3MT와 PVK를 혼합한 후 그 복합체의 광학적 특성을 확인하기 위해 UV/Vis 흡수와 PL 측정실험을 수행하였다. P3MT와 PVK 복합체를 이용하여 유기 발광다이오드를 제작한 후 전기적, 광학적 특성을 관찰하였다.

Ep1-020 **Fabrication of high current field emitter from carbon nano fiber films under extremely small patterns** 채 교원, 이 순일, 고 근하(*아주대학교 에너지시스템학부.*) We report high current density field emission from carbon nanofiber (CNF) films synthesized using electroplated Ni catalysts on gold buffer layers via hot-filament chemical vapor deposition (HFCVD) method. Furthermore, we make sufficient field emitter under various conditions – synthesized temperature &thickness of Ni films. Thickness of Ni films &Temperature during HFCVD process arevery dominant factor to synthesize good CNF that use field emission cathode. Specially, we find the condition to synthesize CNF sufficient for using field emission cathode. Furthermore, we make CNF emitter to use extremely small patterns and verify its emission properties.

Ep1-021 **Defect-induced loading of Pt nanoparticles on carbon nanotubes** KIM Sung Jin, KIM Ki Kang, AN Kay Hyeok, LEE Young Hee (*Sungkyunkwan University, Physics Division.*) Nanostructured carbon materials are potentially of great technological interest for the development of electronic, catalytic, hydrogen-storage and fuel cell systems. Carbon nanotubes (CNTs)-supported Pt nanoparticle catalysts were prepared by a rapid microwave technique for fuel cells. Microwave rapid heating has received considerable attention as a new promising method for the preparation of carbon support. Yet, the uniform distribution of Pt nanoparticles and monodispersion in sizes are still far from practical limit. In this work, we introduced defects of carbon nanotubes by using additional oxidant during strong acid treatment. Pt nanoparticles were loaded on carbon nanotubes under microwave oven. Our Raman spectra and X-ray diffraction analysis proved that the defect created during oxidation and mi-