제80회 정기총회 프로그램, 논문초록집

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with a simple GGA and the LDA+U method.

**Ea-08(조)** Quantitative structure determinations of molecular adsorption on transition metal surfaces using scanned-energy mode photoelectron diffraction

강 지훈, TOOMES R. L., WOODRUFF D. P., 이 영백 1University of Warwick, 2q-Psi & 한양대) Quantitative structure determinations using scanned-energy mode photoelectron diffraction are presented for two adsorption systems. For the CuH/Ni(110) system the benzene molecule is adsorbed on the hollow site. The molecular plane is parallel to the surface, and the molecule is centered on a four-fold coordinated site with two opposite C-C bonds perpendicular to the <110> axis. The Cu-Ni nearest-neighbour layer spacing is 1.81 ± 0.03 Å. A very high precision for the C-C distance (1.45 ± 0.03 Å) was found and an isotropic expansion of the C-C bond lengths was confirmed. The first quantitative study of glycine/Cu(100) will also be given.

**Ea-09** Synthesis of ion-doped ZnO nanowires

김 철홍, 박 청우, 강 성웅, 이 철성, 김 진호, 우 병철, 윤 현수(한국표준과학연구원 전자소자그룹, 1경북 대학교 무기계공학과) We report on the synthesis of mono- and tri-valent metal ion-doped ZnO nanowires by two step process: the conventional ceramic mixing followed by the vapor-liquid-solid(VLS) process. Li⁺ and In⁺-doped ZnO prepared by the ceramic mixing process and was deposited onto a Au-coated sapphire (a-plane) substrate at 1000°C for 2 h, which led to the formation of the nanowires. Effects of ion doping on morphology, phase, and optical properties of the ion-doped ZnO nanowires were discussed based on XRD, SEM, and PL analysis.

**Ea-10** Nanosphere Lithography for Growth of Periodic Arrays of Vertically Aligned Carbon Nanotubes

PARK Kyung ho, LEE Soonil, KOH Ken

(Nanotechnology, Aijou University) Periodic arrays of vertically aligned isolated carbon nanofibers(CNFs) have been fabricated using self-assembled polystyrene spheres as shadow masks for catalyst-pattern formation. Proper use of monolayer- and bilayer-masks, and judicious combination of angle-deposition technique with monolayer masks have allowed us to control the dot-size and spacing of catalyst patterns. As long as the catalyst-dot size is not too large, isolated single CNF has grown from each catalyst dot. Combing nanosphere lithography with conventional photolithography, we have been able to realize patterned growth of CNF arrays on selected areas.

**Ea-11** Charge transport properties of multiwalled carbon nanotube-poly(methyl methacrylate) composites

KIM Heon Mo, KIM Min Ki, JOO Jinsoo, CHO Youn jung, KANG Won, CHO Jin je, YOON Ho Sang 1Dept. of Phys. Korea Univ., 2Dept. of Phys. Ewha Womans Univ. 3Iljin Nanotech Co., 4NOVATEMS Inc.) Electrical properties and metal-insulator transition were studied in thin films of multiwalled carbon nanotube (MWCNT)-poly (methyl methacrylate) (PMMA) composites. MWCNTs were synthesized by conventional chemical vapor deposition method. Thin composite films were synthesized from various weight concentration of MWCNTs, which were dispersed in insulating PMMA matrix by high power sonication. Charge transport properties of the composites were studied from the measured dc conductivity (σdc) and its temperature dependence [σdc(T)] in the range of 0.3K-300K. The σdc at room temperature increased as MWCNT concentration increased, which shows typical percolation behavior. We observed that the percolation threshold was observed around 0.3wt.% of MWCNTs. The σdc(T) of composites with high concentration of MWCNTs was compared to the composites with the concentration below percolation threshold. The σdc(T) of the composites with high concentration of MWCNTs shows metallic behavior at low temperatures which originated from metallic property of one dimensional carbon nanotubes. Charge transport properties and electrostatic application of multiwalled carbon nanotube-poly(methyl methacrylate) composites

**Ea-12** Enhancement and Quenching Effects