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김대중컨벤션센터
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EFFECTIVE METHOD FOR GROWTH IMPROVEMENT OF SWNTs, WE MEASURED IT BY FE-SEM, RAMAN SPECTROSCOPY, TEM, XPS.

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**Ep-036**

Hydrogen of Ti-Zr-Ni Quasicrystals

LEE Sang-hwa, JEON Jae-kyun, LEE Yummmun, SHIN Hyemin, KIM Euikwon, LEE Jeongil, CHOI Soo-bin(Hanyang University, Department of Physics). Quasicrystals(QCs) made with Ti-Zr-Ni are known to excellent materials for hydrogen storage applications because of their high number of tetragonal and octagonal interstitial sites and chemical attraction with hydrogen. QCs were prepared by adding Pd in the Ti-Zr-Ni alloys (Ti5Zr50Ni3Pd), where 0≤x≤10. Hydrogen absorption data and pressure-composition-temperature(PC-T) curves were obtained by using a lab-built computer-controlled-absorption apparatus. Structure of the samples was analyzed by using X-ray diffraction (XRD) and transmission electron microscope(TEM). By adding a Pd, the vapor pressure of hydrogen in the QCs was increased from 8000 torr to 9000 torr at 30° C. The activation energy of hydrogen was lowered by etching the oxygen layer using plasma and immediate Pd coating.

**Ep-037**

A new system designed to obtain Fullerene(C60) cluster by using vapor of solution

YEO Seung Jun, CHO Dae Hee, PODE Ramchandra, KIM Hwa Min', AHN Jeung Sun(Yeung Hee University. Catholic University of Daegu.) From the in-depth investigation of temperature dependence of the luminescence of C60 in toluene, benzene and CS2 solutions, we reported that the C60 aggregates are formed during cooling at the freezing temperature of these solvents. Furthermore, the C60 aggregates were found to be weakly bound clusters which are unstable, upon warming, in liquid solutions above ca.210 K. It was also found that the C60 aggregates can be changed to stable structures by irradiating with UV pulse-laser (Nd:YAG laser, 355nm). As a consequence, we could obtain new-type of nanoscale C60 clusters, which appear as round-shaped nanoscale particles in high resolution transmission electron-microscopy (HRTEM) images. However, the yield of the new-type C60 clusters obtained by this method is too small. So, we designed and developed a new system to obtain C60 cluster of macroscopic quantity. In this system, C60 solution was vaporized to droplet in vacuum, resulting in formation of C60 aggregates by evaporating solvent. The system was invented to produce new nanoscale carbon clusters by the irradiation of UV light upon C60 aggregates in vacuum. We have characterized the processes formed from the new system by using HPLC. Before 60min (peak by fullerene molecules), peaks of 33min~53min mean existence of some materials, bigger than fullerene molecules in the HPLC trace of photo-polymerized C60 cluster formed by using the new system. So we can assume that some of these materials are the photo-polymerized C60 clusters obtained by this new system. In the presentation, the details of the new system and the results of characterization will be reported.

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**Ep-038**

 선택적 전자전 조사에 의한 표면장중 탄소산화물 활성 금 나노입자 배터리 제조 김용당, 조성우(KAIST) 금 전극 필름에 선택적 전자전 조사의 온처리를 가하여 페타하원 필름 매각장 탄소산화물(SERS) 활성 금 나노입자 필름을 제조하였다. 금 전극제 필름은 20 kV의 에너지로 8.29×106 cm²의 토랑 면적 300mL에서 전자전으로 제조된 후, 300°C에서 30분간 가열하였다. 또한, 페타하원 필름 내부 금 나노입자의 크기는 금 전극제 필름의 두께 를 변화시킴으로써 100μm에서 3μm으로 조절 가능한 SEM을 이용하여 확인하였다. 전자전은 필름의 크기가 따른 특성의 볼록형 특성을 나타내는 UV-Vis 축정을 이용하여 확인하였다. 또한, 생성된 금 나노입자가 기능성 물질로 페타하원 필름의 XP분석을 통해 확인하였다. 페타하원 금 나노입자 필름의 SERS 효과를 측정하기 위해 thiophenol(TP)을 이용하였으며, 632.8nm 파장을 가지는 He-Ne 레이저를 이기 광장으로 사용하였다. TP의 1573 cm⁻¹ 피크를 기준으로 한 SERS 강도들은 약 10⁻⁶로 측정되었다.

**Ep-039**

Pentacene nanowires array

조성기, 이진우, 김기열, 정건선, 주진수(고려대학교 물리학과 와이브리드 연구개설) 유기단공계 pentacene 나노배열을 나노 직접형 다공성 무기 배경 절질(AI2O3)을 기반으로 organic vapor transport (OVT) 방법을 이용하여 성장시켰다. HP를 이용하여 벽영결함을 제거한 후 전자전주사인열로(STM)들 뿐만주사인열(TEM)을 이용하여 나노신의 길이 및 구조를 확인하였다. 측정된 나노신의 길이는 약 10 μm 미만으로, 길이는 약 200 nm 미만을 확인하였다. 장정된 pentacene 나노신들을 UV/Vis 흔적 실험과 PL 실험을 통해서 광학적 특성을 조사하였다. FT-IR 실림과 Raman 실험을 통해서 분자 구조를 확인하였다. 그리고 Laser confocal microscope (LCM)의 실험을 이용하여 pentacene 나노신에 대한 발전 특성을 관찰하였다.

**Ep-040**

Slow drying of active layers for enhanced performance of the organic photovoltaic cells

LEE Cheol Eui, KIM Nam-yoon, OH In Hwan, LEE Bummo(Department of Physics, Korea University) Control of thin film morphology at the nano scale is