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the SAMs and subsequent anodization of the Si substrates, while the contrasts observed only on the ODS-SAM/Si sample at the low bias range of 1 - 5 V for surface modification is considered probably due to charge trapping in the oxide layer and/or at the SAM/oxide interface.

**Ep-019** Electrical transport of Ni nanowire
KOO Ae-young, CHO M.K.1, CHO J.W.1, KIM Y.K.2, KANG C.J.(1Department of Nano Science and Engineering, Myongji University. 2Program in Micro/Nano Systems, Korea University.) Nanowires were widely pursued one-dimensional nanostructures and provide diverse opportunities in nanotechnology. From nanoelectronic devices to cell-separation and magnetic labeling in biomedicine. We are interested in fabrication, electrical conductivity, optical and magnetic properties of various nanowires by electrodeposition [1]. In this work, Ni nanowires were synthesized in anodized aluminum oxide (AAO) nanotemplates. Their structure and properties were characterized by scanning electron microscopy (SEM), transmission electron microscopy (TEM)/selected-area electron diffraction (SAED), X-ray diffraction (XRD), vibrating sample magnetometry (VSM), atomic force microscopy (AFM) and electrically conductive AFM (c-AFM). As Ni has very small magnetocrystalline anisotropy, the magnetic properties of the nanowires were investigated as a function of shape anisotropy tailored by the nanowire diameter and length/diameter aspect ratio [2]. The theoretical study by AFM was performed on individual nanowires in-situ and electrical measurements were completed by c-AFM on both single nanowire and ensemble specimens after chemical mechanical polishing (CMP) [3]. The results reveal that the I-V characteristic of single Ni nanowire is quite different from that of an ensemble. The corresponding transport mechanism is addressed.

**Ep-020** Density-functional Calculations for Pt Cluster Adsorption on Graphene and Adsorption of Hydrogen Atom
PARK Sora, AHN Jeung Sun, CHI Dam Hiou.(Dept. of Physics, Kyung Hee Univ. School of Materials Science, Japan Advanced Institute of Science and Technology.) Density-functional calculations of the adsorption of Pt clusters on graphene surface were performed for study about support effect of carbon support on catalytic activity of the system consists of Pt cluster and graphene surface. We suggested several possible adsorption sites of Pt cluster on graphene surface which have local energy minimum, and investigated the transition energy between different adsorption sites of Pt cluster. We also calculated the binding energy between hydrogen atom and Pt cluster in each adsorption sites of Pt cluster on graphene surface. The support effect of graphene surface on catalytic activity of the system was found to be related with the change of adsorption sites of Pt cluster on graphene surface for making the binding energy of hydrogen atom and Pt cluster weak due to the change of electronic structure of whole system.

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**Ep-021** Influence of titanium and oxidized silicon in amorphous silicon oxide nanowire growth on Au coated substrate by solid state transformation
SONG Jin ho, OH E.S., WHANG C.N., CHO M.H., ANN J.P.1.(Institute of Physics and Applied Physics, Yonsei University. 2Korea Institute of Science and Technology.) Amorphous silicon oxide nanowires (a-SiONWs) were synthesized by direct solid state transformation from silicon substrate. The a-SiONWs were grown on Au/Si Substrates with provided titanium vapor during the annealing in mixture gas of O2 and Ar at 900°C. Without any silicon vapor during the process, a-SiONWs can be grown on the Au/Si substrate resulting from the transformation of Solid-Liquid-Solid rather than the conventional Vapor-Liquid-Solid. In order to investigate the role of silicon oxide grown Si substrate before the growth of nanowire, two alternative samples were prepared: Direct stack structure of Au(4nm)/Ti(1nm)/Si sub without any SiO2 layer (S1) and indirect stack structure of Au(4nm)/Ti(1nm)/SiOx(100nm)/Si sub with thick SiO2 layer (S2). The significance is that the a-SiONW was only grown on the S2, not on the S1. No growth of the a-SiONW can be associated with the removal of the native oxide layer by the formation of Ti-silicide. As a result, it is revealed that silicon oxide layer is essentially needed to synthesize a-SiONWs.

**Ep-022** Field Emission Properties of Screen Printed Carbon Nanotube Field Emitter
KANG Jun-Tae, JEONG Jin-Woo, KIM Dong-II, KIM Ji-Seon, KIM dae-jun, LEE Hyung-Ra2, SONG Yoon-Ho2(Convergence Component &Materials Research Laboratory, Electronics and Telecommunications Research Institute. 3Kamho Elecs, INC. 4Kyungook National University.) The carbon nanotube (CNT) field emitters based on the paste-printing technology have advantages of cost-effective and large area process for field emission display (FED) and lamp (FEL). The CNT paste was prepared by mixing of multiwalled carbon nanotubes (MWNTs), nano-scale metal filler, organic binding materials. We measured its field emission characteristics including stability and uniformity. It is noted that field emission properties greatly depend on the CNT paste composition and emitter process as well as CNT itself.

**Ep-023** 근 나노입자를 흡착시킨 발광표면차 나노입자의 광학적 특성 연구 이응배, 박동혁, 주진수(고려대학교 물리학과 하이브리드 나노구조 연구실.) 200 nm의 나노 입자를 갖고 있는 Al2O3 (다공성 무기 배경물질)을 이용하여 polythiophene (PTH) 및 그 유도체 나노선을 전기접합방법으로 형성하였다. H2를 이용하여 배경물질을 제거한 후 전자주사 현미경 (SEM) 실험을 통해서 까지가 약 40 μm이고, 정점이 200-250 nm인 나노선으로 총합하였음을 확인하였다. 여기에 정점이 30 nm인 근 나노입자를 나노선에 흡착시킨 후 전자주사 현미경 (TEM) 실험을 통해 근 나노입자가 나노선 표면에 흡착하였음을 확인하였다. 실제로 제작된 하이브리드구조 나노입자의 광학적 특성을 확인하기 위해 laser confocal microscope PL 측정하였습니다.

**Ep-024** Optical and Electrical Characteristics of Copper