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휘닉스파크
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they can be used in NIR thermal therapy of tumors and drug delivery. In addition to spectral tunability, biomolecules are easily conjugated to Au nanoshells and it provides the capability of tumor cell targeting.

**Ep3-090** Controlled growth of silicon oxide nanowires on Si substrates using Au and Au-Pd catalysts

In this work, we report amorphous SiOx nanowires directly grown on Si substrates via a solid-liquid-solid formation mechanism. Au-Pd and Au thin films (3 nm) deposited on Si (001) and (111) substrates were used as catalysts for growth of nanowires. High-yield synthesis of SiOx nanowires was simply achieved by heating (1050-1150°C) in an Ar-ambient atmosphere without introducing any additional Si source materials. The grown nanowires were characterized by FE-SEM, EDX, and HR-TEM measurements. Morphology and composition of the amorphous SiOx nanowires with diameters of 10-100 nm and lengths of a few tens of micrometers could be easily controlled by as a function of growth conditions including substrates, catalysts, heating temperatures, and processing time.

**Ep3-091** Metallization Scheme for Electrical Transport in Self Assembled Large Scale Carbon Nanotube Array

We report on an investigation of various metallization schemes to self-assembled large scale carbon nanotube arrays. Reliable and robust metallization scheme to realize ohmic contacts to single wall carbon nanotubes (swCNT) by metallic thin films is an important technological step for the realization of swCNT-based nanoelectronics and their applications. Although electrical contacts to individual swCNT by Cr, Ti and Pd have enabled observations of ballistic electron transport in swCNTs, a systematic study of metallization and the resulting electrical properties for self assembled large scale CNT array has been limited. Self assembled large scale CNT arrays have technological advantages for mass-production of swCNT-based devices. Large scale CNT arrays are selectively patterned by self-assembly on areas defined by lithographic methods. Metallization and electrical properties of resulting contacts are studied by patterning submicron contact areas to 2 mm wide CNT array elements by e-beam lithography followed by e-beam evaporation of potential contact metals. We will report on the resulting electrical properties of the contacts from utilizing differing materials and annealing conditions.

*This work is partly supported by KOSEF and Samsung Electronics Endowment through CSCMR and MOCIE. SH acknowledges the support from TND program.

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**Ep3-092** Photocurrent of CNT-incorporated polymer

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**Ep3-093** Photoluminescence of light emitting polythiophene and its derivatives nanotubes

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Encapsulation of CdSe nano particles in liposome

We studied the encapsulation of CdSe nano-particles inside liposomes suspended in aqueous solution. Mixed solution of CdSe nano-particles and Asolectin lipid molecules was dried and hydrated with PBS buffer solution. And we observed large liposomes with CdSe nano-particles, which exist in two different states. One is that nano-particles exist as micelle state inside liposome. The other is that nano-particles are locally encapsulated in the lipid bilayer of liposome. To our knowledge, the encapsulation of CdSe nano-particles in lipid bilayer of liposome has never been reported before.

Photo-excitation cross section of ErSNS system fabricated by ion implantation

Our studies indicate that the surfactant PVP introduced as a stabilizer are crucial for the formation of such nanostructures. Formation of such nanostructures is attributed to the preferential adsorption of some species of molecules in the solution on the {111} planes of Au nuclei, which influence the growth rate of different crystalline planes, leading to the formation of different shaped Au nanostructures with the {111} planes as the basal surfaces. These gold nanostructures, with unique optical properties and well-defined geometrical shapes, could practically...