한국물리학회

회보

BULLETIN OF THE KOREAN PHYSICAL SOCIETY

2009년 4월 제27권 제2호

2009년 봄 학술논문발표회 및 제85회 정기총회

대전컨벤션센터

2009. 4. 23(목)~24(금)

주최: KPS 사단법인 한국물리학회
후원: DCC 대전컨벤션센터

The Korean Physical Society www.kps.or.kr
**Ep-III-003**  Growth of Cobalt Silicide Nanocrystals in Silicon Dioxide for Nonvolatile Memory

**Applications**

JANG Yoosung, YOON Jonghwan

Gwangju Institute of Science and Technology

Metallic nanocrystals (NC) have received particular attention for nonvolatile memory (NVM) devices with discrete charge traps because they have additional advantages over those of semiconducting nanocrystals, namely, an enhancement in charge storage capacity and retention time. In particular, a well-defined metallic NC monolayer has high potential for NVM device applications with large storage capacity. In this work, we report the direct growth of crystalline cobalt (Co) disilicide (CoSi$_2$) nanocrystals (NCs) in silicon-rich silicon oxide (SiO$_x$) layers. We show that the CoSi$_2$ NCs grow into well-defined single crystalline structures embedded in a SiO$_x$ matrix by thermal annealing of a sandwich structure comprised of a thin Co film sandwiched between two silicon-rich oxide (SiO$_x$) layers. Capacitance-voltage ($C-V$) measurements are shown to have $C-V$ characteristics suitable for nonvolatile memory applications, including large memory window, long retention time, and excellent endurance.

---

**Ep-III-004**  Optoelectrical Characteristics of Single Strand of Hybrid Multi-Walled Carbon Nanotube Coated with Poly (3-hexylthiophene)

Kim Jihoon, Shin Jihyun, Yeo Seok, Pak Jongheuk, Choi Jinsu

Gwangju Institute of Science and Technology

Multi-walled carbon nanotubes (MWCNTs) have been extensively studied due to their unique optoelectrical properties, including the possibility of suppressing electrical charges in the presence of light. MWCNTs are known for their high electrical conductivity, mechanical strength, and thermal stability. In this work, we investigated the optoelectrical characteristics of single strands of hybrid multi-walled carbon nanotubes (HMWCNTs) coated with poly (3-hexylthiophene) (P3HT) and compared them to other organic materials. The HMWCNT/P3HT hybrid system exhibited excellent optoelectrical properties, including high electrical conductivity and responsivity to light, making it a promising candidate for optoelectronic devices.

---

*Note: The images and text are not properly aligned and may contain inaccuracies due to the limitations of the image processing software.*