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Particulate Sol 공정을 이용한 PPV-TiO_2 나노 복합체의 특성

The Properties of PPV-TiO_2 Nanocomposite Using Particulate Sol Process

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Particulate sol을 이용하여 제조한 poly(ρ-phenylenevinylene) [PPV]-TiO_2 나노 복합체에서 TiO_2 첨가가 복합체에 미치는 영향을 UV-Vis 흡수 분광과 FT-IR 및 Photoluminescence(PL) 분광 특성을 통해 연구하였다 TiO_2 첨가량에 따라 나노 복합체의 vibronic band intensity distribution이 0-0 transition 비율이 증가하는 방향으로 변화하였고, vibronic spacing이 증가하였다 이러한 변화는 열처리 온도가 낮을수록 더 크게 나타났고, 160°C 이하에서는 conjugation length가 증가하여 spectra가 red shift하는 특성들을 나타냈다 TiO_2 nanopowder를 이용한 나노 복합체와의 비교 분석을 통해 particulate sol이 PPV precursor에 미치는 영향을 규명하였다

구두발표

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Growth of Single Crystalline SiC Nanowires by Chemical Vapor Deposition

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Recently, Wide Bandgap Semiconductor Nanowires(WBSNs) have received much interest as key materials toward fabrication of nano-scaled devices and system integration. Many WBSNs have been successfully synthesized from group III-V Semiconductor from group IV-IV, e.g., SiC in this study, have also been interested due to its unique properties for high power- and high temperature applicable devices Theoretical calculations and experimental results have shown that the chemical and physical properties of an individual SiC Nanowire(SiCNW) are superior to those of bulk or thin film SiC In the present study, single crystal SiCNWs were synthesized by chemical vapor deposition. Methyltrichlorosilane(MTS) were used as a precusor and the effects of catalysts and substrates on the growth of SiCNW were throughly investigated Single crystalline SiCNWs with diameters of < 50 nm and lengths up to several hundred micrometers were successfully synthesized by using Ni, Co and Fe as catalyst on the graphite or silicon substrate The HRTEM analysis performed on the individual nanowire indicated that the nanowires were well-defined 3C-SiC single crystal with zincblend structure The growth mechanism and some properties of these SiCNWs will be discussed