

Synthesis of High-Density CdS Nanowires on Conducting Glass Substrates for Hybrid Solar Cell Applications

이정철, 박우철, 노경민, 김강일, 유민규, 성윤모*

Department of Materials Science & Engineering, Korea University, Seoul 136-713, South Korea

High-density CdS nanowires (NWs) were successfully grown on fluorine-doped tin oxide (FTO) layer-coated soda-lime glass substrates via vapor-liquid-solid (VLS) mechanism at a remarkably reduced temperature of ~450 °C. Bi catalyst layer and polyvinyl alcohol (PVA) played a major role in the low temperature synthesis of high-quality CdS NW arrays. CdS NWs were defect free single crystalline wurtzite crystals and they were 50~100 nm and 2~5 μm in diameter and length, respectively. CdS NWs were combined with poly [2-methoxy-5-(2'-ethylhexyloxy)-1, 4-phenylenevinylene] (MEH-PPV), a conjugated polymer to form organic/inorganic hybrids. The light absorption and light emission properties of MEH-PPV/CdS hybrids were investigated and their potential to be used as photovoltaic cells was demonstrated.