

Field emission characteristics of SiC nanowires synthesized by chemical vapor deposition

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We report on field emission characteristics of β -SiC nanowires synthesized by chemical vapor deposition on (001) Si substrate with Ni catalyst. The diameter of SiC nanowires was in the range of 20~100 nm with the length more than 100 μm . X-ray diffraction and transmission electron microscopy analyses showed that SiC nanowires have zinc blend structure with the axial direction of $\langle 111 \rangle$. From the field emission measurements, the turn-on field was determined to be 1.8 V/ μm at current density of 10 $\mu\text{A}/\text{cm}^2$. We also observed the emission of bright light on ITO cathode electrode coated by phosphor, which suggests the applicability of these nanowire array to display devices.