

Growth of β -SiC nanowires with various metal(Me=Ni, Fe, Au) assistant by thermal MOCVD method

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In this study, we have grown β -silicon carbide nanowires on metal deposited Si(100) substrates using dichloromethylvinylsilane ($\text{CH}_2\text{CHSi}(\text{CH}_3)\text{Cl}_2$) as a single molecular precursor by thermal metal-organic chemical vapor deposition (MOCVD) method. The general growth pressure and temperature is 50 mTorr, 800~1000 °C, respectively in this study. The β -silicon carbide nanowires have diameters in the range of 50~100 nm and lengths up to several tens of micrometers. XRD data shows that β -silicon carbide nanowire has [111] growth direction. Also, TEM data shows that β -silicon carbide nanowire was grown using metal catalyst, and amorphous carbon was reigning surrounding the SiC nanowires. The β -silicon carbide nanowires were characterized by X-ray Diffraction (XRD), X-ray photoelectron spectroscopy (XPS), Transmission electron microscopy (TEM) and Scanning Electron Microscopy (SEM).