

Growth Of Highly Branched SiC Nanowires With SiO₂/C Pellet by Carbothermic Reduction

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Highly branched SiC nanowires were synthesized by direct carbothermal reduction with SiO₂-C pellets at 1400°C. The extensive morphological properties revealed that the high-density branched structures of SiC nanowires were incorporated by a direct carbothermic reduction of SiO₂-C pellets. The diameter of the grown SiC nanowires are about 100-150nm and length is about 600-800 nm. The grown SiC nanowires were characterized by field-emission scanning electron microscopy (FE-SEM), transmission electron microscopy (TEM), Raman and X-ray diffraction (XRD). These investigations confirm the grown SiC nanowires are a cubic β-SiC. It was found that the density and quality of SiC nanowires increased as increasing the temperature of arc furnace. The formation process and growth mechanism of the β-SiC nanowires is analyzed and discussed briefly.