

Growth of Carbon Nanofibers on the Carbon Fibers

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A simple and effective technique for growth of carbon nanofibers (CNFs) on mesoporous silica-Ni film coated on the carbon fiber surfaces was developed. Acetylene was used as the carbon source and CVD method was performed at 1023 K under atmospheric pressure. The incorporation of the Ni catalyst into pore channels of mesoporous silica results in controlling the growth of nanostructure CNFs. SEM and TEM results indicated that the CNFs with a diameter between 20 and 100 nm were grown uniformly and densely on carbon fiber surfaces, which have a herringbone structure. It was also found that the specific surface area of the carbon fibers after growth of CNFs increased significantly from nitrogen full isotherm, and the electrical properties of carbon fibers were enhanced as a result of growth of CNFs.