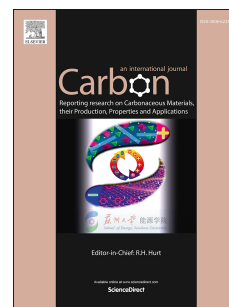


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Growth of carbon nanotubes on carbon fibers using the combustion flame oxy-acetylene method

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Abstract: Multi-walled carbon nanotubes (MWCNTs) were directly grown on carbon fibers (CFs) using the combustion flame oxy-acetylene method. Ferrocene deposited on the fiber surface acts as a catalyst for carbon nanotubes (CNTs) growth. The effects of ferrocene concentration on the morphology of the CNTs coating were investigated. Growth temperature ranges from 500 to 650°C at atmospheric pressure, while growth surface is a continuous 10 x 1000 mm² tape. CNTs are produced with a dense entanglement, covering the CFs uniformly. Tube outer diameters are in the range of 20 to 40 nm. Tube length is quite long (about 4-5 µm) and uniform. Particularly, growth times are very short: about 0.3 - 0.6 s. Growth morphology and other characteristics of the as-grown tubes were examined by scanning electron microscopy (SEM), transmission electron microscopy (TEM), Energy dispersive X-ray (EDX) and by Raman spectroscopy.

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