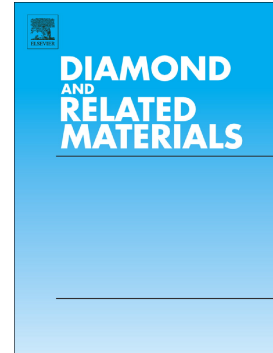


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Abstract

The investigation of the morphology of N-doped multi-walled carbon nanotubes (N-MWCNT) is still a crucial issue. Considering different nitrogen precursors we synthesized N-MWCNT at 750 °C using a sublimation-based chemical vapor deposition (SCVD) method. Compared to undoped multi-walled carbon nanotubes (MWCNT), nitrogen incorporation into the carbon lattice leads to a straighter CNT morphology in which the catalyst particles are mostly consist of iron carbide and not of metallic iron. An important finding is that not only the presence and concentration of nitrogen and the formation of iron carbide have a strong influence on the CNT straightness, but also the concentration of the sublimated catalyst precursor ferrocene in the gas phase. The lower its concentration the longer and larger the catalyst particle, resulting in a high CNT straightness.

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