

Microcoiled carbon fibers formed by using
Ni-Cu catalysts in CVD process

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Microcoiled carbon fibers were formed in a CVD process by the catalytic pyrolysis of acetylene over supported Ni-Cu catalysts, comparing with that formed by unsupported Ni-Cu alloy catalysts, in the presence of sulfur compound impurity at 750~800°C. The influence of reaction conditions on morphology and microstructure were examined, and the growth mechanism is discussed. It is found that under the presence of sulfur impurity, Ni catalysts alloying with copper brought about significant changes in activities and resulting in formation of multiple-helix carbon coils. The carbon coils have the diameter of about several micron, the sub-fibers that composed of the coiled fiber have the width of several tens to hundreds nanometers. The diversity of tip morphology is presented.