



### **N-doped Y-junction nanotubes**

Well-aligned, N-doped carbon nanotube bundles and Y-junction nanotubes have been synthesized by floating catalytic chemical vapor deposition (CVD). Vapor phase pyrolysis of ferrocene-pyridine mixtures under Ar-H<sub>2</sub> atmosphere yielded well-aligned nanotube arrays on silicon wafers with good field emission properties, while N-doped Y-junction nanotubes have been produced in large quantities by pyrolysis of Fe(C<sub>5</sub>H<sub>5</sub>)<sub>2</sub>-C<sub>x</sub>H<sub>y</sub>N mixtures in a nitrogen atmosphere. N-doped Y-junction nanotubes have potential applications in nanoelectronics such as nanochips and field-effect transistors since they exhibit diode properties at the junction or in composite materials as a two dimensional reinforcement.

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