



COLLEGE OF WILLIAM AND MARY TECHNOLOGY TRANSFER OFFICE

TITLE (AND CASE NUMBER) OF INVENTION

Carbon Nanotube Synthesis (0201)

INVENTORS

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(This invention is jointly owned with Pennsylvania State University, NASA, and SURA)

APPLICATIONS

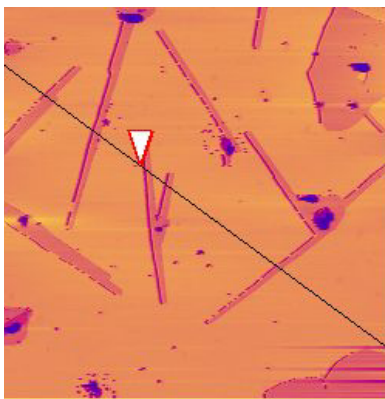
This invention details a novel process for making carbon nanotubes useful in many applications. This method of synthesis provides commercial production rates and produces tailored, high-quality carbon nanotubes.

SUMMARY

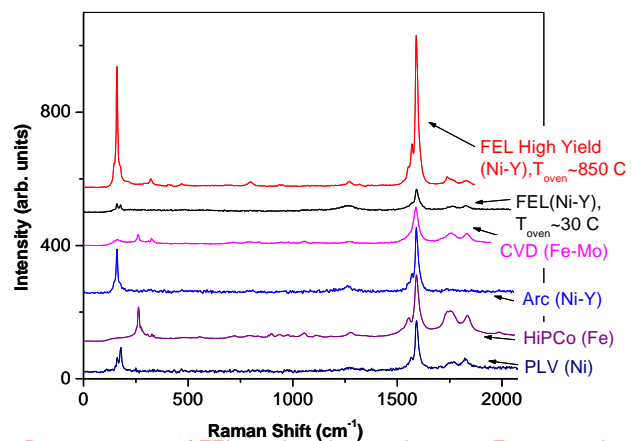
Since the first reports of the production of single-walled carbon nanotubes (SWNT), a variety of synthetic routes have been developed to improve both the production rate and the fractional conversion of carbon feedstocks to SWNTs. Low production rates and qualities have plagued many of the processes developed to date.

This invention describes a method for making SWNTs at commercially feasible rates, and with high quality and consistency. The SWNTs produced using this method are generally longer, and of smaller bundle size, than those observed in the prior art.

The invention uses ultra-fast pulse, high average power laser energy directed at a carbon target in relative motion to the laser to produce the SWNTs. More specifically, the invention uses a free electron laser (FEL) to produce the SWNTs.



AFM image of FEL-produced nanotube bundles. Bundles average about 12 nm in diameter and 5-10 μm in length.



Raman spectra of FEL-produced nanotube soot. For comparison purposes, spectra of nanotubes synthesized by other methods are also displayed.

PATENT STATUS

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