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(54) Title: METHODS FOR PRODUCING AND USING CATALYTIC SUBSTRATES FOR CARBON NANOTUBE GROWTH

(57) Abstract: A catalyst material for carbon nanotube synthesis includes a uniform dispersion of host particles on a substrate. The host particles themselves include catalyst nanoparticles that are effective to catalyze nanotube syntheses reactions and provide nucleation sites. Methods for preparing catalyst materials include co-sputtering a catalytic species and a host species to form a precursor thin film on a substrate, followed by an oxidation reaction of the precursor thin film in air. The precursor thin film can be patterned on the substrate to limit the locations of the catalyst material to well-defined areas. Methods for nanotube synthesis employ CVD in conjunction with the catalyst materials of the invention. During the synthesis, the catalyst nanoparticles catalyze carbon nanotubes to grown from a carbon-containing gas.

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INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC: **B01J 37/02**(2006.01),**37/14**(2006.01),**23/74**(2006.01);**D01F 9/127**(2006.01)

USPC: 423/447.3;502/305,314,325;205/255;427/229,255.19,383.1

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,528,020 B1 (DAI et al) 4 March 2003 (04.03.2003), entire document	1,12-14,16-20,22,24-27,30
X	US 6,346,189 B1 (DAI et al) 12 February 2002 (12.02.2002), entire document	1,12-19,24-30
X	US 6,401,526 B1 (DAI et al) 11 June 2002 (11.06.2002), entire document	1,7-14,16,18-19,21,23-28,30
X	US 6,596,187 B2 (Coll et al) 22 June 2003 (22.06.2003), entire document	1-6,12,14-19,23-25



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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

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