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(54) Title: ELECTROTHERMAL INTERFACE MATERIAL ENHANCER

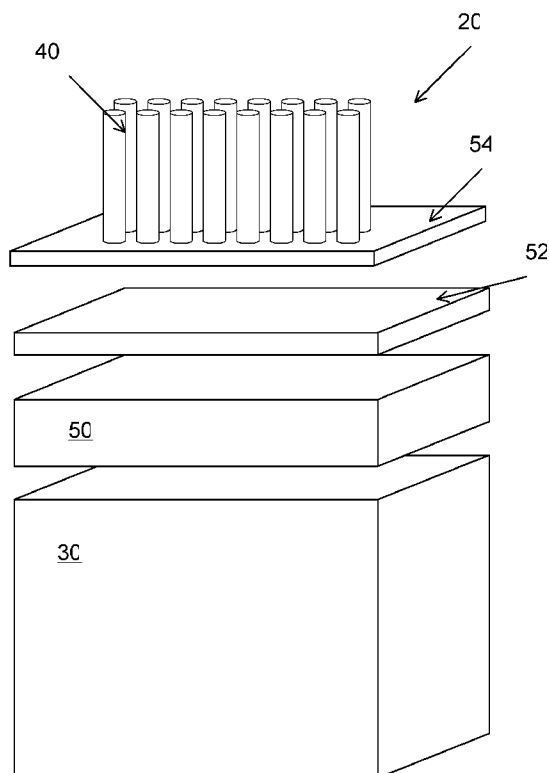


FIG. 1b

(57) Abstract: Vertically oriented carbon nanotubes (CNT) arrays have been simultaneously synthesized at relatively low growth temperatures (i.e., < 700°C) on both sides of aluminum foil via plasma enhanced chemical vapor deposition. The resulting CNT arrays were highly dense, and the average CNT diameter in the arrays was approximately 10 nm. A CNT TIM that consist of CNT arrays directly and simultaneously synthesized on both sides of aluminum foil has been fabricated. The TIM is insertable and allows temperature sensitive and/or rough substrates to be interfaced by highly conductive and conformable CNT arrays. The use of metallic foil is economical and may prove favorable in manufacturing due to its wide use.

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USPC - 427/271

According to International Patent Classification (IPC) or to both national classification and IPC

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

USPC - 427/271,122, \$, 977/742,842, \$, B82B 1/00, B82B 3/00, \$

Search Terms Below

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

PubWEST (USPT, PGPB, EPAB, JPAB), google com

Search Terms Used carbon nanotubes, foil, aluminum walls, heat, buffer, heat sensitive, phase change, thermally conductive, adhesive, melting

C DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 2005/0224220 A1 (Li et al) 13 October 2005 (13 10 2005), abstract, para [0009], [0012], [0022], [0039],	1, 2, 5, 19, 20, 22, 30, 32, 34, 35

Y		3, 4, 6-18, 21, 23-26, 31, 33
Y	US 6,359,334 B1 (Jiang) 19 March 2002 (19 03 2002) entire document, especially Abstract, col 2, ln 41-46, col 3, ln 17-28, col 3, ln 41-46, col 4, ln 7-10, col 4, 16-19, col 5, ln 22-26	3, 4, 6, 8-12, 21, 27-29, 31, 33
Y	US 2006/0083927 A1 (Von Ehr) 20 April 2006 (20 04 2006), para [0016]-[0018]	7-14, 33
Y	US 2006/0208354 A1 (Liu et al) 21 September 2006 (21 09 2006), abstract, para [0008], [0023]	15-18, 23-26
Y	US 2003/01 17770 A1 (Montgomery et al) 15 November 2005 (15 11 2005) entire document, especially Abstract, para [0018], [0020], [0021]	27-29
A	US 6,91 1,260 B2 (Ren et al) 28 June 2005 (28 06 2005) entire document, especially Abstract, col 2, ln 25-36, col 8, col 5-17, col 9, ln 60 to col 10, ln 11, col 14, ln 15-24	2, 5, 8-12, 18, 30-35

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