

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 April 2008 (24.04.2008)

PCT

(10) International Publication Number
WO 2008/048938 A2

(51) International Patent Classification:
H01J 61/04 (2006.01)

YAGLIOGLU, Onnik [TR/US]; 2448 Basswood Drive,
San Ramon, California 94582 (US).

(21) International Application Number:
PCT/US2007/081423

(74) Agents: **HAUSER, Robert Scott** et al.; 7005 Southfront
Road, Livermore, California 94551 (US).

(22) International Filing Date: 15 October 2007 (15.10.2007)

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG,
ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK,
LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW,
MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL,
PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/829,674 16 October 2006 (16.10.2006) US
60/938,673 17 May 2007 (17.05.2007) US
11/872,008 13 October 2007 (13.10.2007) US

(71) Applicant (for all designated States except US): **FORM-
FACTOR, INC.** [US/US]; 7005 Southfront Road, Liver-
more, California 94551 (US).

(72) Inventors; and

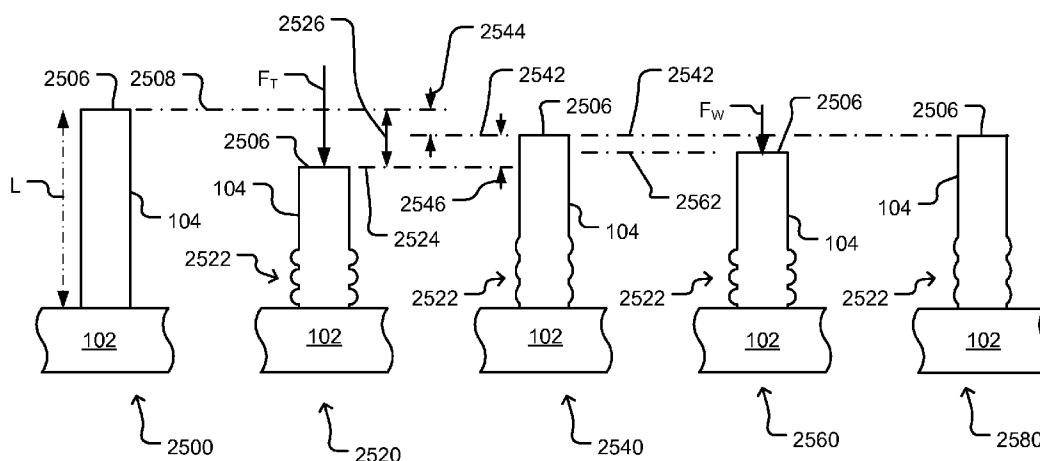
(75) Inventors/Applicants (for US only): **ELDRIDGE, Ben-
jamin N.** [US/US]; 651 Sheri Lane, Danville, California
94526 (US). **GRITTERS, John K.** [US/US]; 5873 Elder
Circle, Livermore, California 94550 (US). **MARTENS,
Rodney I.** [US/US]; 44 Redbud Court, Danville, Cali-
fornia 94526 (US). **SLOCUM, Alexander H.** [US/US];
One Merrill Crossing, Bow, New Hampshire 03304 (US).

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report

(54) Title: MAKING AND USING CARBON NANOTUBE PROBES



(57) Abstract: Columns comprising a plurality of vertically aligned carbon nanotubes can be configured as electromechanical contact structures or probes. The columns can be grown on a sacrificial substrate and transferred to a product substrate, or the columns can be grown on the product substrate. The columns can be treated to enhance mechanical properties such as stiffness, electrical properties such as electrical conductivity, and/or physical contact characteristics. The columns can be mechanically tuned to have predetermined spring properties. The columns can be used as electromechanical probes, for example, to contact and test electronic devices such as semiconductor dies, and the columns can make unique marks on terminals of the electronic devices.

WO 2008/048938 A2