## ${\bf (19)}\ World\ Intellectual\ Property\ Organization$

International Bureau





**PCT** 

(43) International Publication Date 22 December 2005 (22.12.2005)

# (51) International Patent Classification: *H01L 21/31* (2006.01)

(21) International Application Number:

PCT/US2005/020104

(22) International Filing Date: 7 June 2005 (07.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/578,236 8 June 2004 (08.06.2004) US 60/632,570 30 November 2004 (30.11.2004) US 60/671,134 13 April 2005 (13.04.2005) US

(71) Applicant (for all designated States except US): NANOSYS, INC. [US/US]; 2625 Hanover Street, Palo Alto, CA 94304 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HEALD, David, L. [US/US]; 976 Ballard Canyon Road, Solvang, CA 93463 (US). CRUDEN, Karen, Chu [US/US]; 3681 Virgin Islands Court, Pleasanton, CA 94588 (US). DUAN, Xiangfeng [CN/US]; 1200 Dale Avenue, Apt# 131, Mountain View, CA 94040 (US). LIU, Chao [CN/US]; 7295 Via Vico Way, San Jose, CA 95129 (US). PARCE, J., Wallace [US/US]; 754 Los Robles Avenue, Palo Alto, CA 94306 (US).

# (10) International Publication Number WO 2005/122235 A3

- (74) Agent: QUINE, Jonathan, Alan; Quine Intellectual Property Law Group, P.C., P.O. Box 458, Alameda, CA 94501 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (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, MC, 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:

with international search report

(88) Date of publication of the international search report: 21 June 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND DEVICES FOR FORMING NANOSTRUCTURE MONOLAYERS AND DEVICES INCLUDING SUCH MONOLAYERS

(57) Abstract: Methods for forming or patterning nanostructure arrays are provided. The methods involve formation of a arrays on coatings comprising nanostructure association groups, pattering using resist, and/or use of devices that facilitate array formation. Related devices for forming nanostructure arrays are also provided, as are devices including nanostructure arrays (e.g., memory devices).



### INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/20104

A. CLASSIFICATION OF SUBJECT MATTER			
IPC: H01L 21/31(2006.01)			
USPC: 438/257,758;257/14;977/845,855			
According to International Patent Classification (IPC) or to both national classification and IPC			
The board of the Carting			
B, FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols)			
U.S.: 438/257, 758; 257/14; 977/845, 855			
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)			
WEST			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category *	Citation of document, with indication, where a	ppropriate, of the relevant passages	Relevant to claim No.
Y	US 6,340,822B1 (BROWN et al) 22 January 2002 (2	2.01.2002), Figures 1-6.	1-183
Y	US 6,586,785B2 (FLAGAN et al) 01 July 2003 (01.0	1-183	
v	line 10. Y WO 99/01766 (UNIVERSITEIT UTRECHT) 14 January 1999 (14.01.1999), column 1, lines		1-183
Y	5-15 and column 2, 10-25)		
	o to aid obtaini a, to ao,		
		Į	
	ক		
Further	documents are listed in the continuation of Box C.	See patent family annex.	
	pecial categories of cited documents:	"T" later document published after the inter	national filing date or priority
		date and not in conflict with the applica	ition but cited to understand the
	defining the general state of the art which is not considered to be of relevance	principle or theory underlying the inver	j
	plication or patent published on or after the international filing date	"X" document of particular relevance; the considered novel or cannot be consider	
		when the document is taken alone	ed to involve an inventive step
	which may throw doubts on priority claim(s) or which is cited to the publication date of another citation or other special reason (as	"Y" document of particular relevance; the c	laimed invention cannot be
specified)		considered to involve an inventive step combined with one or more other such	
"O" document	referring to an oral disclosure, use, exhibition or other means	being obvious to a person skilled in the	
"P" document	published prior to the international filing date but later than the	"&" document member of the same patent f	amily
priority date claimed			
Date of the actual completion of the international search		Date of mailing of the international search report	
31 January 2007 (31.01.2007)		Z O MAR ZUU/	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Authorized officer	
Mail Stop PCT, Attn: ISA/US Commissioner for Patents		Alexander G. Ghyka Yun Dill Jou	
P.O. Box 1450		Telephone No. (703) 308-0956	
Alexandria, Virginia 22313-1450  Facsimile No. (571) 273-3201			
r acsimile Mo	. (311) 213-3201	<u></u>	

Form PCT/ISA/210 (second sheet) (April 2005)