

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 April 2006 (06.04.2006)

PCT

(10) International Publication Number
WO 2006/036217 A3

(51) International Patent Classification:
B05D 5/00 (2006.01) **B05C 11/00** (2006.01)

(21) International Application Number:
PCT/US2005/015966

(22) International Filing Date: 10 May 2005 (10.05.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/603,508 18 August 2004 (18.08.2004) US
10/956,596 29 September 2004 (29.09.2004) US

(71) Applicant (for all designated States except US): **THE GOVERNMENT OF THE UNITED STATES OF AMERICA**, as represented by **THE SECRETARY OF THE NAVY** [US/US]; Naval Research Laboratory, 4555 Overlook Avenue SW, Code 1008.2, Washington, DC 20375 (US).

(72) Inventors: **SHEEHAN, Paul, E**; 6908 Gillings Road, Springfield, VA 22152 (US). **LLOYED, William, J.**; 4740 Deer Run Court, Alexandria, VA 22306 (US). **KING, William, P**; 914 Collier Road, Apt. 5106, Atlanta, GA 30318 (US).

(74) Agent: **KARASEK, John, J.**; Associate Counsel (Patents), Naval Research Laboratory, 4555 Overlook Avenue, SW, Washington, DC 20375-5325 (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 December 2006

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: THERMAL CONTROL OF DEPOSITION IN DIP PEN NANOLITHOGRAPHY

(57) Abstract: The present invention describes an apparatus for nanolithography and a process for thermally controlling the deposition of a solid organic "ink" from the tip of an atomic force microscope to a substrate. The invention may be used to turn deposition of the ink to the substrate on or off by either raising its temperature above or lowering its temperature below the ink's melting temperature. This process may be useful as it allows ink deposition to be turned on and off and the deposition rate to change without the tip breaking contact with the substrate. The same tip can then be used for imaging purposes without fear of contamination. This invention can allow ink to be deposited in a vacuum enclosure, and can also allow for greater spatial resolution as the inks used have lower surface mobilities once cooled than those used in other nanolithography methods.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/15966

A. CLASSIFICATION OF SUBJECT MATTER IPC: B05D 5/00(2006.01);B05C 11/00(2006.01) USPC: 427/256;118/667 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) U.S. : 427/256; 118/667 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) EAST		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	NELSON et al. Transport in Thermal Dip Pen Nanolithography Proceedings of NANO04: 2004 ASME Integrated Nanosystems NANO2004-46074, 22-24 September 2004, - pages 1 and 2.	1-34
A	KING et al. Atomic Force Microscope Cantelevers for Combined Thermomechanical Data Applied Physics Letters 21 February 2001, Vol. 78 No. 9, pages 1300-1302.	1-34
A	US 6,674,074 B2 (SCHWARTZ) 06 January 2004 (06.01.2004), column 3, lines 13-15 and 23-26, column 4, lines 55-56 and 63-66, and column 5, lines 24-26.	1-34
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 04 September 2006 (04.09.2006)		Date of mailing of the international search report 04 OCT 2006
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer William P. Fletcher III Telephone No. (571) 272-1700