



- (51) **International Patent Classification:**
B08B 9/032 (2006.01)
- (21) **International Application Number:**
PCT/US2013/036695
- (22) **International Filing Date:**
16 April 2013 (16.04.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
13/448,724 17 April 2012 (17.04.2012) US
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- (81) **Designated States** (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,
RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))*

Published:

- *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*

(54) **Title:** MATERIAL DEPOSITION SYSTEM AND METHOD FOR DEPOSITING MATERIALS ON A SUBSTRATE

(57) **Abstract:** A material deposition system for depositing material on an electronic substrate includes a frame, a support coupled to the frame and configured to support an electronic substrate during a deposit operation, a gantry coupled to the frame, and a deposition head coupled to the gantry. The deposition head is movable over the support by movement of the gantry. The deposition head includes a chamber configured to hold material, an actuator configured to push a volume of material out of the chamber, a needle extending from the chamber and terminating in a needle orifice, and at least two air jets located on opposite sides of the needle orifice. A desired volume of material is formed at the needle orifice in response to the actuator, and each of the at least two air jets produce a timed pulse of air to create a micro-droplet from the desired volume and to accelerate the micro-droplet to high velocity. Other embodiments of the material deposition system and method of dispensing are further disclosed.

