(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 March 2013 (28.03.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/040778 A1

(51) International Patent Classification:
H01L 21/67 (2006.01) *H01L 21/687* (2006.01)

(21) International Application Number:
PCT/CN2011/080011

(22) International Filing Date:
22 September 2011 (22.09.2011)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **ACM RESEARCH (SHANGHAI) INC.** [CN/CN]; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-Tech Park, Shanghai 201203 (CN).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **ZHANG, Xiaoyan** [CN/CN]; Building 4, No. 1690 Cai Lun Road, Zhangjiang Hing-Tech Park, Shanghai 201203 (CN). **CHEN, Fuping** [CN/CN]; Building 4, No. 1690 Cai Lun Road, Zhangjiang Hing-Tech Park, Shanghai 201203 (CN). **WANG, Hui** [US/CN]; Building 4, No. 1690 Cai Lun Road, Zhangjiang Hing-Tech Park, Shanghai 201203 (CN).

(74) Agent: **SHANGHAI PATENT & TRADEMARK LAW OFFICE, LLC**; 435 Guiping Road, Shanghai 200233 (CN).

(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, 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, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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).

Published:

— *with international search report (Art. 21(3))*

(54) **Title**: METHODS AND APPARATUS FOR CLEANING FLIP CHIP ASSEMBLIES

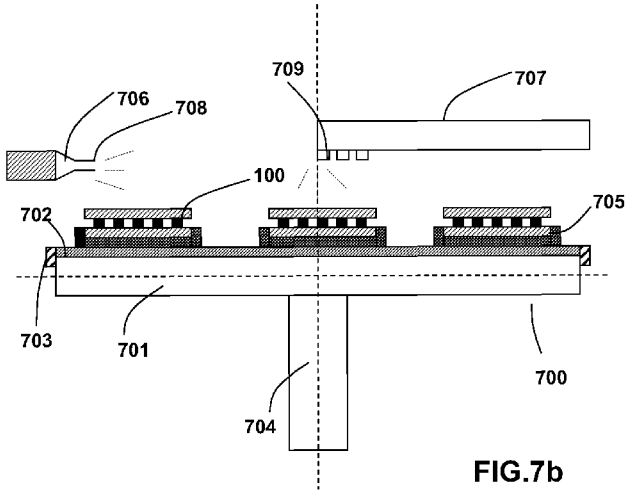


FIG.7b

(57) **Abstract**: An apparatus and methods for cleaning flip chip (100) assemblies are provided. The apparatus comprises: a chuck assembly (701); a motor coupled to the chuck assembly (701) by a spindle (704); at least one carrier (705) for holding flip chips (100); and at least one spray nozzle (706, 707) for directing de-ionized water, a cleaning solution, a gas or a vapor. The apparatus and methods provide a thorough and uniform cleaning of flux residues and other contaminants.

WO 2013/040778 A1