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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 June 2012 (14.06.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/078930 A3

(51) International Patent Classification:
B01L 7/00 (2006.01)

(21) International Application Number:
PCT/US2011/064036

(22) International Filing Date:
8 December 2011 (08.12.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/421,204 8 December 2010 (08.12.2010) US

(71) Applicant *(for all designated States except US)*: **LIFE TECHNOLOGIES CORPORATION** [US/US]; 5791 Van Allen Way, Carlsbad, CA 92008 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **YEO, Huei** [SG/SG]; Life Technologies Corporation, 5791 Van Allen Way, Carlsbad, CA 92008 (US). **LAU, Soo Yong** [SG/SG]; Life Technologies Corporation, 5791 Van Allen Way, Carlsbad, CA 92008 (US). **CONG, Jiang** [CN/SG]; Life Technologies Corporation, 5791 Van Allen Way, Carlsbad, CA 92008 (US).

(74) Agents: **NOVAK, Jason** et al.; Life Technologies Corporation, 5791 Van Allen Way, Carlsbad, CA 92008 (US).

(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, RW, 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,

[Continued on next page]

(54) Title: CONTROL SYSTEMS AND METHODS FOR BIOLOGICAL APPLICATIONS

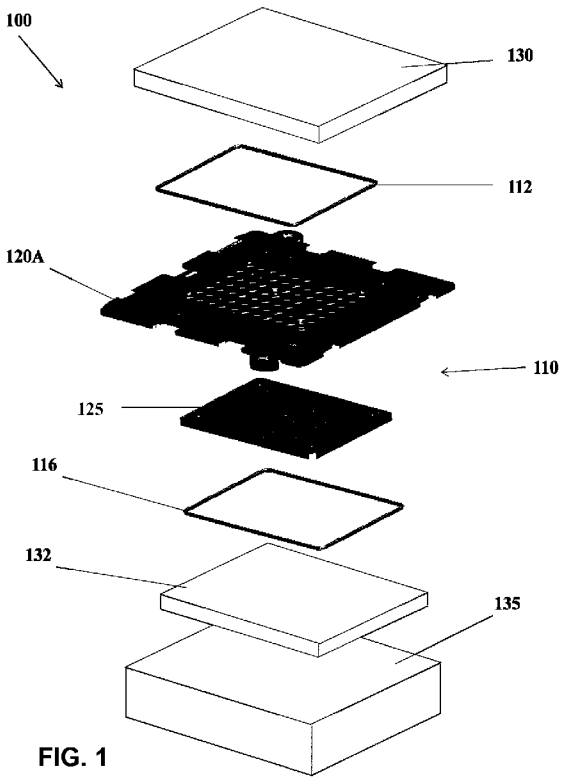

FIG. 1

(57) Abstract: A thermal cycler (100) is provided. The thermal cycler (100) comprises a tray assembly (110) The tray assembly (110) comprises a main body (120) made of a first material having a first thermal conductivity. The tray assembly (110) further comprises an adaptor (125) made of a second material having a thermal conductivity that is greater than the thermal conductivity of the first material. The thermal cycler (100) also includes a control block (135) configured to control the temperature of the one or more nucleotide samples. The thermal cycler (100) further includes a thermal cover (130) sized and positioned to at least partially cover the plurality of vessels. The thermal cycler (100) further includes a sample block (132) including one or more depressions configured to receive a plurality of vessels containing one or more nucleotide samples.

WO 2012/078930 A3

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))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
1 November 2012