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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 March 2025 (27.03.2025)

WIPO | PCT

(10) International Publication Number
WO 2025/062341 A1

(51) International Patent Classification:
G01N 21/27 (2006.01) *G01N 21/05* (2006.01)
C12Q 1/6869 (2018.01) *G01N 21/64* (2006.01)

(21) International Application Number:
PCT/IB2024/059112

(22) International Filing Date:
19 September 2024 (19.09.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/584,056 20 September 2023 (20.09.2023) US

(71) Applicant: **ELEMENT BIOSCIENCES, INC.** [US/US]; 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US).

(72) Inventors; and

(71) Applicants: **MAH, Hui Zhen** [MY/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **SAHA, Sanchari** [IN/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **PREVITE, Michael** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **CHEN, Xiyi** [CN/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **FULLER, Derek** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **CHANG, Chiting** [CN/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **NIMAN, Cassandra** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **CHEN, Steve** [US/US];

(54) **Title:** SOLID-STATE AND CONFIGURABLE OPTICAL TEST TARGETS AND FLOW CELL DEVICES

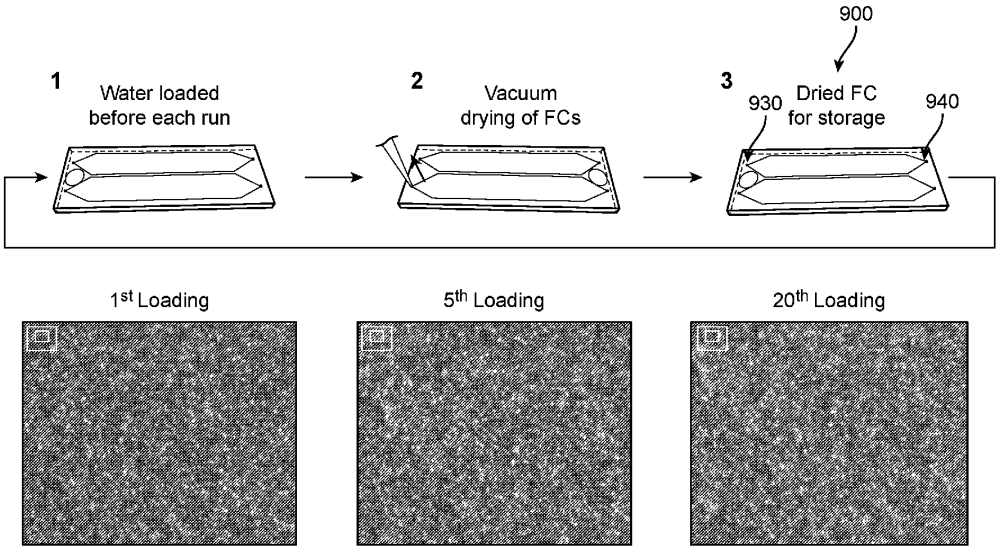

FIG. 11

(57) **Abstract:** The present disclosure provides solid-state optical test targets useful for evaluating the performance of an optical imaging system. The solid-state optical test targets comprise at least a first substrate made from a flat transparent material. In some embodiments, the solid-state optical test targets further comprise an opaque coating that forms a micropattern. The first substrate is positioned in direct contact with the micropattern. The optical test targets described herein lack a flow cell and lack a liquid, and are therefore solid-state apparatus. Since the solid-state optical test targets lack a flow cell and liquid, the thickness of the first substrate is adjusted to simulate the presence of a hypothetic flow cell which could be located for example below the first substrate. The adjusted thickness of the first substrate can simulate the collective effects of the first substrate and the hypothetical flow cell containing a fluid/liquid. The disclosure also provides flow cells comprising pluralities of fluorescent beads for use as fiducials, and methods of using same in high throughput

WO 2025/062341 A1

[Continued on next page]

c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **GHORBANI, Arash** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **GUO, Minghao** [CN/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **JIN, Chaoyi** [CN/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **MA, Rui** [CN/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **NEYSMITH, Jordan** [CA/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **PILAND, Geoffrey** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **RONG, Daisong** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **SCHWOERER, Bowen** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US). **HUDYMA, Russell** [US/US]; c/o Element Biosciences, Inc., 10055 Barnes Canyon Road, Suite 100, San Diego, California 92121 (US).

(74) **Agent: ERLACHER, Heidi** et al.; Cooley LLP, Attn: IP Docketing, 1299 Pennsylvania Avenue, NW, Suite 700, Washington, District of Columbia 20004 (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, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, 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, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, 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))*
— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

sequencing applications.