

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
05 August 2021 (05.08.2021)



(10) International Publication Number
WO 2021/152335 A1

(51) International Patent Classification:
G01N 21/51 (2006.01) G01N 21/47 (2006.01)

(21) International Application Number:
PCT/GB2021/050223

(22) International Filing Date:
01 February 2021 (01.02.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2001397.5 31 January 2020 (31.01.2020) GB

(71) Applicant: **ODX INNOVATIONS LIMITED** [GB/GB];
Solasta House, 8 Inverness Campus, Inverness Scotland IV2
5NA (GB).

(72) Inventors: **WOODER, Nicholas**; TTP PLC, Melbourn
Science Park, Melbourn SG8 6EE (GB). **CARR, Alexan-
der**; TTP PLC, Melbourn Science Park, Melbourn SG8
6EE (GB). **HARDING, Piers**; TTP PLC, Melbourn Science
Park, Melbourn SG8 6EE (GB). **SANDERS, Giles**; TTP
PLC, Melbourn Science Park, Melbourn SG8 6EE (GB).
CHIRNSIDE, Ewan; ODx Innovations Limited, Solasta
House, 8 Inverness Campus, Inverness Scotland IV2 5NA
(GB). **MALECHA, Mike**; ODx Innovations Limited, So-
lasta House, 8 Inverness Campus, Inverness Scotland IV2
5NA (GB).

(74) Agent: **MOORE, Michael** et al.; Keltie LLP, No.1 London
Bridge, London Greater London SE1 9BA (GB).

(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, DJ, DK, DM, DO,

(54) Title: APPARATUS, SYSTEM AND METHOD FOR MEASURING PROPERTIES OF A SAMPLE

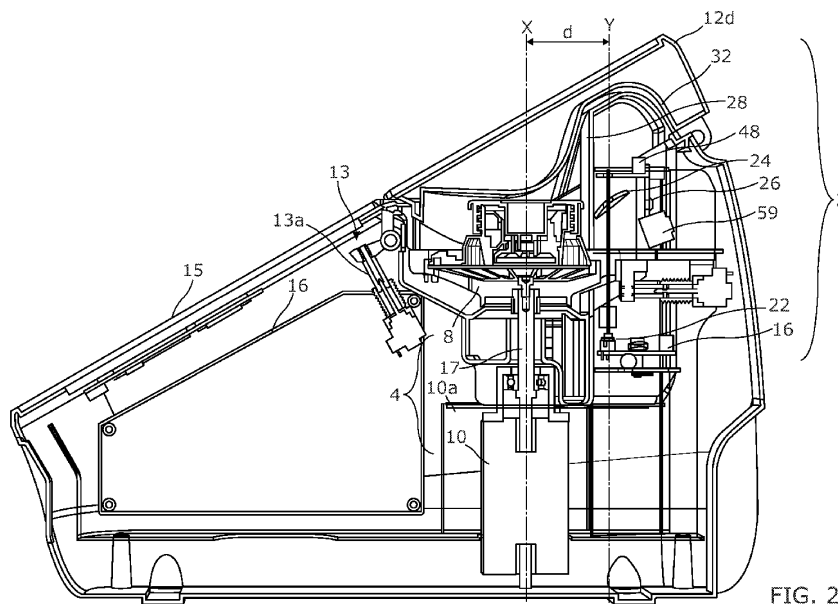


FIG. 2

(57) Abstract: A device (1) comprising an optical apparatus (2) for monitoring bacterial growth of a drug-dosed liquid biological sample. A sample container port for receiving a sample container (6), in use, is provided in the device, the sample container (6) having at least one detection chamber (20) for containing the drug-dosed sample. The optical apparatus (2) comprises a light source (22) configured to emit light along an incident beam axis that, in use, intersects with at least one detection chamber (20) of the sample container (6), and to illuminate the drug-dosed sample contained within the detection chamber (20). The optical apparatus (20) comprises a first photodetector (26) configured to receive light scattered by bacteria in the sample. The optical apparatus (2) comprises a light collection arrangement (24) configured to collect light exiting the detection chamber (20) that has been scattered in a forward direction by bacteria in the sample, in a range of scattering angles between about ± 4 and ± 20 degrees relative to the incident beam axis, and

[Continued on next page]

WO 2021/152335 A1

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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, 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, GH, GM, KE, LR, LS, MW, MZ, NA, RW, 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, 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))*

to direct the collected scattered light to the first photodetector (26); and prevent non-scattered light travelling parallel to the incident beam axis and exiting the detection chamber (20) from reaching the first photodetector (26). The optical apparatus (2) comprises at least one processor configured to: measure an intensity of the scattered light received by the first photodetector (26); determine a corresponding representative amount or concentration of bacteria present in the sample based on the intensity of the scattered light; repeat the measuring and determining steps at a series of pre-determined intervals to determine changes in the representative amount or concentration of bacteria present in the sample as a function of time; and determine a corresponding susceptibility of the bacteria in the sample to the respective drug.