



(51) International Patent Classification:

C12M 1/00 (2006.01) C12M 1/36 (2006.01)
C12M 1/34 (2006.01)

(21) International Application Number:

PCT/US2019/056885

(22) International Filing Date:

18 October 2019 (18.10.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/747,489 18 October 2018 (18.10.2018) US

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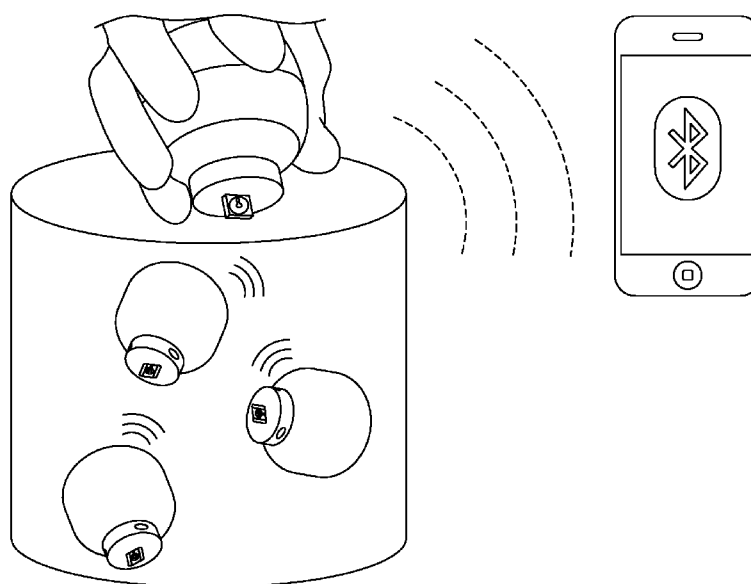
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, 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, 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, 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,

(54) Title: INTEGRATED CAPSULE SYSTEM FOR REAL-TIME BIOPROCESS MONITORING AND METHOD OF USING THE SAME

FIG. 1



(57) Abstract: An apparatus for monitoring a bioprocess parameter. The apparatus includes: a housing; a bioprocess sensor attached to an outer surface of the housing; a power supply contained within the housing; and an electronics module contained within the housing and in communication with the power supply and the sensor, where the electronics module includes a wireless communication unit.



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))*

(88) Date of publication of the international search report:

06 August 2020 (06.08.2020)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US19/56885

A. CLASSIFICATION OF SUBJECT MATTER

IPC - C12M 1/00, 1/34, 1/36 (2019.01)

CPC - C12M 1/34, 1/36, 41/00, 41/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2005/0245794 A1 (DINSMOOR, D) 03 November 2005; figures 2, 3, paragraphs [0020], [0022]-[0024], [0029], [0031], [0032]	1, 5, 13, 15, 23, 24 --- 2-4, 6-12, 14, 16-22, 25-27
Y	TODTENBERG, N et al. "Autonomous Sensor Capsule for Usage in Bioreactors" IEEE Sensors Journal; Publication [online]. 12 March 2015 [retrieved 20 December 2019]. Retrieved from the Internet: <URL: https://ieeexplore.ieee.org/document/7059205 >; DOI: 10.1109/JSEN.2015.2412652; see entire document	2-4, 10, 11
Y	US 2015/0345689 A1 (FINESSE SOLUTIONS, INC.) 03 December 2015; paragraphs [0004], [0122]	4
Y	US 2015/0011874 A1 (MICROPHARMA LIMITED) 08 January 2015; paragraphs [0045], [0048]	6
Y	FRANC, B et al. "Measurement of Changes in Tissue Metabolism Using a Clark-Type Oxygen Sensor" Actuator and Microsystems Workshop; Publication [online]. 2-6 June 2002; [retrieved: 19 December 2019]. Retrieved from the Internet: <URL: http://complex.gmu.edu/people/peixoto/subpages/pubs/hh02.pdf >; see entire document	7, 8, 16
Y	US 8,615,374 B1 (DISCENZO, F) 24 December 2013; column 15, line 61 through column 16, line 7, column 16, lines 23-28	9
Y	US 6,689,056 B1 (KILCOYNE, J et al.) 10 February 2004; column 4, lines 23-20, column 18, line 59 through column 19, line 9, column 20, lines 43-46, line 61 through column 21, line 8	12, 17



Further documents are listed in the continuation of Box C.



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Date of the actual completion of the international search

19 December 2019 (19.12.2019)

Date of mailing of the international search report

15 JAN 2020

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US19/56885

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0168127 A1 (ZARUBA, G et al.) 19 July 2007; paragraphs [0028], [0030], [0032]	14
Y	US 2017/0124845 A1 (GE HEALTHCARE BIO-SCIENCES AB) 04 May 2017; paragraphs [0030] [0092]-[0095]	18, 19, 26
Y	US 2018/0190096 A1 (LUNDY, D) 05 July 2018; paragraph [0056]	25
Y	US 2009/0177143 A1 (MARKLE, W et al.) 09 July 2009; paragraphs [0196], [0200]	27