

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
29 October 2020 (29.10.2020)



(10) International Publication Number
WO 2020/219593 A1

(51) International Patent Classification:

B03C 5/02 (2006.01) *C12M 1/42* (2006.01)
G01N 35/10 (2006.01) *B01L 3/00* (2006.01)
C12M 1/32 (2006.01)

(21) International Application Number:

PCT/US2020/029387

(22) International Filing Date:

22 April 2020 (22.04.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/837,646 23 April 2019 (23.04.2019) US

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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, 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).

(54) Title: DIELECTROPHORETIC IMMOBILIZATION OF A PARTICLE IN PROXIMITY TO A CAVITY FOR INTERFACING

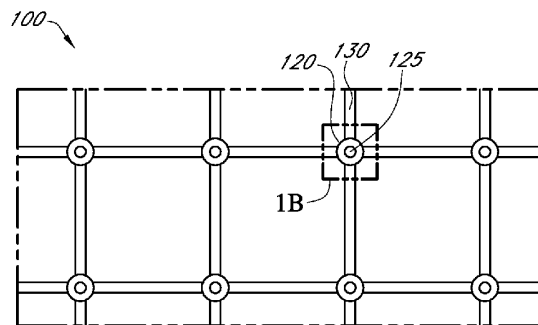


FIG. 1A

(57) Abstract: An apparatus for immobilizing a particle in a fluid and a method for operating the apparatus are disclosed. The apparatus includes a membrane for separating a fluid from a compartment, one or more electrodes disposed proximate to the membrane, a counter-electrode, wherein the one or more electrodes and the counter-electrode are configured to generate a non-linear electric field across the one or more electrodes and the counter-electrode, and a power source for providing an alternating current (AC) across the one or more electrodes and the counter-electrode, thereby generating an oscillating non-linear electric field for immobilizing a particle suspended in the fluid that flows between the one or more electrodes and the counter-electrode. The membrane can have an opening to allow for mechanical manipulation of the particle that is immobilized with a sharp member configured to enter across the membrane from the compartment.

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Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

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