



(51) International Patent Classification:

B81B 3/00 (2006.01) *H01L 41/113* (2006.01)
F03G 7/08 (2006.01) *H02N 2/18* (2006.01)

(21) International Application Number:

PCT/US2017/067798

(22) International Filing Date:

21 December 2017 (21.12.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/438,327 22 December 2016 (22.12.2016) 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, 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, 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))

(54) Title: ENERGY HARVESTING DEVICES AND SENSORS, AND METHODS OF MAKING AND USE THEREOF

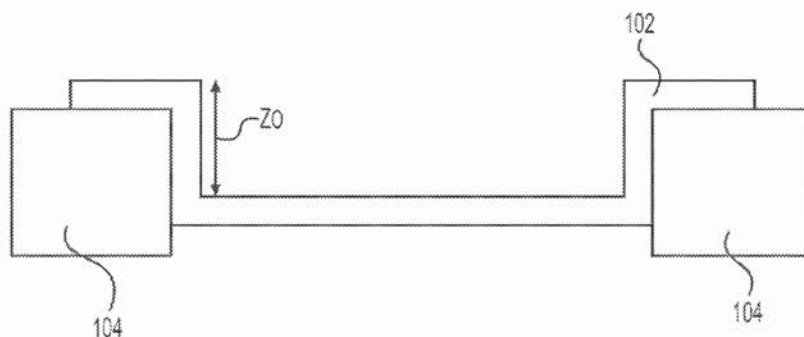


FIG. 1

(57) Abstract: Disclosed herein are energy harvesting devices and sensors, and methods of making and use thereof. The energy harvesting devices can comprise a membrane disposed on a substrate, wherein the membrane comprises a two-dimensional (2D) material and one or more ripples; and a component electrically, magnetically, and/or mechanically coupled to the membrane and/or the substrate, such that the component is configured to harvest energy from the membrane. The sensors can comprise a membrane disposed on a substrate, wherein the membrane comprises a two-dimensional material one or more ripples; and a component electrically, magnetically, and/or mechanically coupled to the membrane and/or the substrate, such that the component is configured to detect a signal from the membrane.