



(51) International Patent Classification:

B82Y 30/00 (2011.01) **H01L 21/302** (2006.01)
B82Y 40/00 (2011.01) **H01L 21/56** (2006.01)
H01L 21/02 (2006.01) **H01L 21/768** (2006.01)

(21) International Application Number:

PCT/US2023/017725

(22) International Filing Date:

06 April 2023 (06.04.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/328,510	07 April 2022 (07.04.2022)	US
63/343,003	17 May 2022 (17.05.2022)	US
63/342,699	17 May 2022 (17.05.2022)	US
63/342,717	17 May 2022 (17.05.2022)	US
63/349,946	07 June 2022 (07.06.2022)	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, 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,

(54) Title: TOOL AND PROCESSES FOR ELECTROCHEMICAL ETCHING

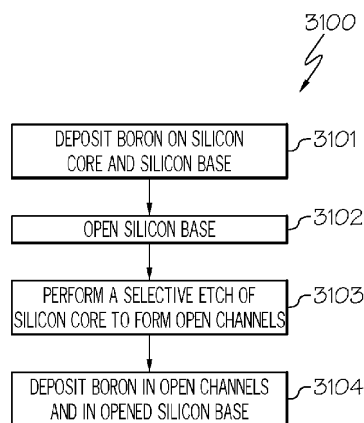


FIG. 31

(57) Abstract: A method for fabricating high aspect ratio nanostructures in arbitrary functional materials. An $(N+1)^{\text{th}}$ layer of substrate material is deposited on top of existing N layers of nanostructures, where N is a natural number. The substrate material in the $(N+1)^{\text{th}}$ layer is then patterned and etched to create complementary nanostructures in the substrate material. Furthermore, a conformal coating of gap-fill materials, encapsulation layers, and functional material on the complementary nanostructures is performed to create functional material nanostructures in the $(N+1)^{\text{th}}$ layer. A set of selective etches on the substrate material is then performed leaving behind multi-layered high aspect ratio nanostructures in the functional material.

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))