



(51) International Patent Classification:

H01L 21/768 (2006.01) C23C 16/455 (2006.01)
H01L 21/285 (2006.01) C23C 16/02 (2006.01)
C23C 16/06 (2006.01)

(21) International Application Number:

PCT/US2022/017005

(22) International Filing Date:

18 February 2022 (18.02.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/200,237 23 February 2021 (23.02.2021) 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, IT, JM, 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,

(54) Title: NON-METAL INCORPORATION IN MOLYBDENUM ON DIELECTRIC SURFACES

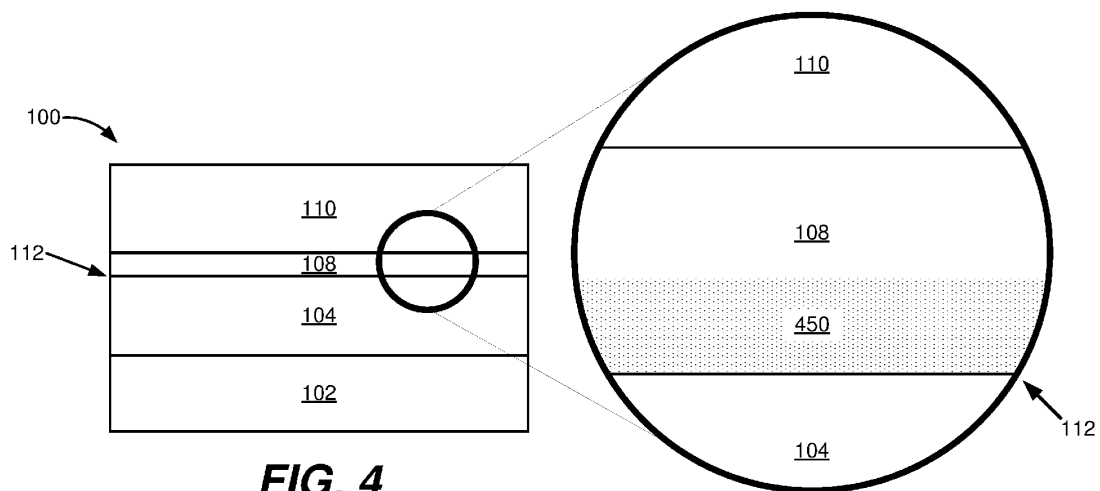


FIG. 4

(57) Abstract: Provided herein are low resistance metallization stack structures for 3D-NAND applications and related methods of fabrication. In some embodiments, thin metal oxynitride nucleation layers are deposited on dielectric material followed by deposition of a pure metal conductor using process conditions that increase non-molybdenum component element content at the oxynitride-dielectric interface. Certain embodiments of the methods described below convert less than all of the metal oxynitride nucleation layer to a pure metal layer, further lowering the resistivity.

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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))*