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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
30 December 2021 (30.12.2021)

WIPO | PCT

(10) International Publication Number
WO 2021/262527 A1

(51) International Patent Classification:
H01L 21/32 (2006.01) *C23C 16/40* (2006.01)
H01L 21/768 (2006.01) *C23C 16/505* (2006.01)
C23C 16/04 (2006.01) *H01J 37/32* (2006.01)
C23C 16/26 (2006.01) *H01L 21/02* (2006.01)

(21) International Application Number:
PCT/US2021/037885

(22) International Filing Date:
17 June 2021 (17.06.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/705,350 23 June 2020 (23.06.2020) 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, 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).

Published:
— *with international search report (Art. 21(3))*

(54) Title: SELECTIVE DEPOSITION USING GRAPHENE AS AN INHIBITOR

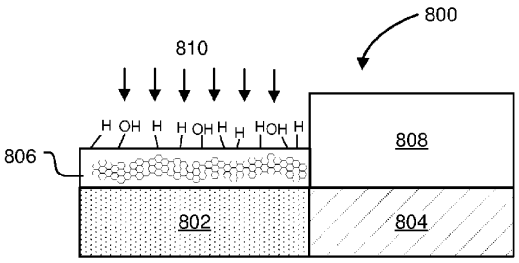

FIG. 8D

(57) Abstract: Graphene is selectively deposited on a metal layer relative to a dielectric layer of a semiconductor substrate. Dielectric material is selectively deposited on the dielectric layer relative to the metal layer of the semiconductor substrate. The graphene is a high-quality graphene film that serves as an inhibitor during deposition of the dielectric material. In some implementations, the dielectric material may be a metal oxide. In some implementations, the dielectric material may be a low-k dielectric material. The graphene remains throughout semiconductor integration processes. In some implementations, the graphene may be subsequently modified by to permit deposition on the surface of the graphene or the graphene may be subsequently removed.

WO 2021/262527 A1