

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

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
16 September 2021 (16.09.2021)



(10) International Publication Number
WO 2021/183472 A1

(51) International Patent Classification:

H01L 21/027 (2006.01) H01L 23/52 (2006.01)
H01L 21/768 (2006.01) H01L 23/532 (2006.01)
H01L 21/311 (2006.01)

(21) International Application Number:

PCT/US2021/021448

(22) International Filing Date:

09 March 2021 (09.03.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

62/987,500 10 March 2020 (10.03.2020) US

(71) Applicant: FUJIFILM ELECTRONIC MATERIALS
U.S.A., INC. [US/US]; 80 Circuit Drive, N. Kingstown,
Rhode Island 02852 (US).

(72) Inventor: MALIK, Sanjay; 40 Gaywood Avenue, Attle-
boro, Massachusetts 02703 (US).

(74) Agent: ZHANG, Tony et al.; Fish & Richardson P.C., P.O.
Box 1022, Minneapolis, Minnesota 55440-1022 (US).

(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: METAL DEPOSITION PROCESSES

(57) Abstract: This disclosure relates to process for depositing a conducting metal into a trench or hole, in which the trench or hole is surrounded by a dielectric film. The process includes a) providing a dielectric film; b) depositing a resist layer on top of the dielectric film; c) patterning the resist layer to form a trench or hole using actinic radiation or an electron beam or x-ray; d) transferring the pattern created in the resist layer to the underlying dielectric film by etching; and e) filling the created pattern in the dielectric film with a conducting metal to form a dielectric film having a conducting metal filled trench or a conducting metal filled hole.



WO 2021/183472 A1