

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 August 2024 (15.08.2024)



(10) International Publication Number
WO 2024/167662 A1

(51) International Patent Classification:

H01L 21/027 (2006.01) *G03F 7/38* (2006.01)
H01L 21/308 (2006.01) *H01L 21/67* (2006.01)
G03F 7/36 (2006.01)

(21) International Application Number:

PCT/US2024/012385

(22) International Filing Date:

22 January 2024 (22.01.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/444,852 10 February 2023 (10.02.2023) US
18/407,776 09 January 2024 (09.01.2024) US

(71) Applicant: **APPLIED MATERIALS, INC.** [US/US];
3050 Bowers Avenue, Santa Clara, CA 95054 (US).

(72) Inventors: **ALVA, Gabriela**; 1140 E. Arques Avenue,
Sunnyvale, CA 94085 (US). **HAN, Zhenxing**; 3050 Bowers
Avenue, Santa Clara, CA 95054 (US). **SACHAN, Madhur**;
2811 Ponce Avenue, Belmont, CA 94002 (US). **LANG,**
Chi-I; 974 E. Arques Avenue, Sunnyvale, CA 94085 (US).
ZHOU, Lin; 974 E. Arques Avenue, Sunnyvale, CA 94085
(US). **LIU, Lequn**; 1140 E. Arques Avenue, Sunnyvale, CA
94085 (US). **KAZEM, Nasrin**; 3050 Bowers Avenue, San-
ta Clara, CA 95054 (US).

(74) Agent: **BERNADICOU, Michael, A.** et al.; Schwabe,
Williamson & Wyatt, P.C., 1211 SW 5th Avenue, Suite
1900, Portland, OR 97204 (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, 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,
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))

(54) Title: PREFERENTIAL INFILTRATION IN LITHOGRAPHIC PROCESS FLOW FOR EUV CAR RESIST

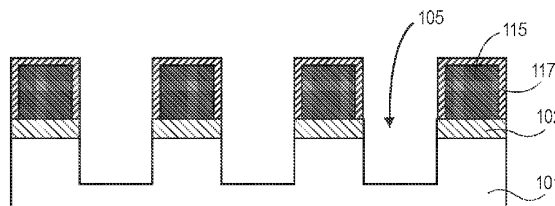


FIG. 1E

(57) Abstract: Embodiments disclosed herein include a method of patterning a substrate. In an embodiment, the method comprises, disposing a photoresist layer over a substrate, and exposing the photoresist layer to form an exposed region and an unexposed region in the photoresist layer. In an embodiment, the method further comprises treating either the exposed region or the unexposed region with a sequential infiltration synthesis (SIS) process to form a treated region, and developing the photoresist layer to remove portions of the photoresist layer other than the treated region.



WO 2024/167662 A1