

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
08 December 2022 (08.12.2022)



(10) International Publication Number
WO 2022/256481 A1

(51) International Patent Classification:
G03F 7/42 (2006.01) *H01L 21/67* (2006.01)

(21) International Application Number:
PCT/US2022/031888

(22) International Filing Date:
02 June 2022 (02.06.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/196,472 03 June 2021 (03.06.2021) US

(71) Applicant: **MKS INSTRUMENTS, INC.** [US/US]; 2
Tech Drive, Andover, MA 01810 (US).

(72) Inventors: **FITTKAU, Jens**; 2 Tech Drive, Suite 201, Andover, MA 01810 (US). **LE TIEC, Christiane**; 2 Tech Drive, Suite 201, Andover, MA 01810 (US). **RETTIG, Curt**; 2 Tech Drive, Suite 201, Andover, MA 01810 (US). **NOLTE, Dirk**; 2 Tech Drive, Suite 201, Andover, MA 01810 (US).

MITTLER, Kay; 2 Tech Drive, Suite 201, Andover, MA 01810 (US). **BECHER, Carsten**; 2 Tech Drive, Suite 201, Andover, MA 01810 (US).

(74) Agent: **SWIENTON, Brian**; 1791 Deere Avenue, Irvine, CA 92606 (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, IQ, 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,

(54) Title: LIGHT-ENHANCED OZONE WAFER PROCESSING SYSTEM AND METHOD OF USE

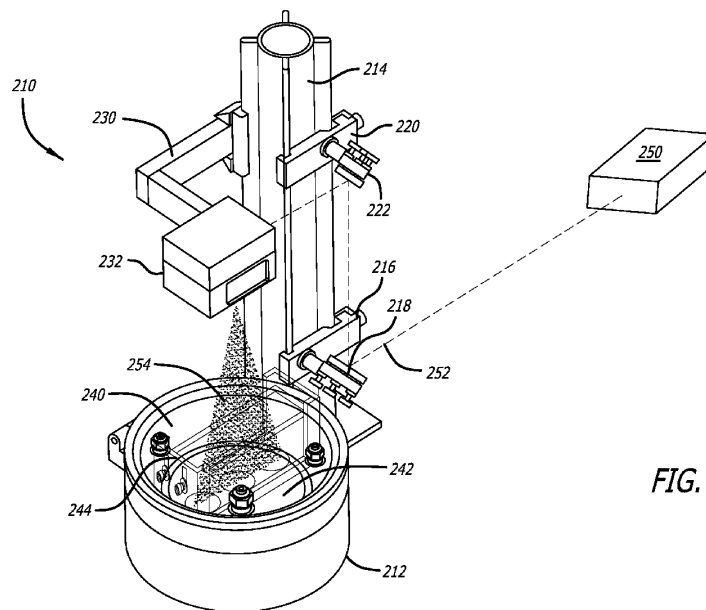


FIG. 11

(57) Abstract: A light-enhanced wafer processing system disclosed herein which includes a rotatable chuck configured to support and selectively rotate at least one wafer, at least one dispenser body configured to selectively flow at least one photolytic material onto a surface of the wafer, and at least one optical radiation source may be configured to provide optical radiation to at least a portion of the wafer having photolytic material applied thereto, wherein the optical radiation is configured to result in the formation of optically-induced radicals having enhanced reactivity with at least one material applied to the wafer.

[Continued on next page]

WO 2022/256481 A1

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))