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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 June 2023 (22.06.2023)

WIPO | PCT

(10) International Publication Number
WO 2023/114729 A1

(51) International Patent Classification:
H01L 21/687 (2006.01) *H01L 21/67* (2006.01)
H01L 21/68 (2006.01) *H01L 21/677* (2006.01)

(21) International Application Number:
PCT/US2022/081389

(22) International Filing Date:
12 December 2022 (12.12.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/265,562 16 December 2021 (16.12.2021) US

(71) Applicant: **LAM RESEARCH CORPORATION** [US/US]; 4650 Cushing Parkway, Fremont, California 94538 (US).

(72) Inventors: **HIESTER, Jacob Lee**; 4650 Cushing Parkway, Fremont, California 94538 (US). **GALGINAITIS, Jason Gordon**; 4650 Cushing Parkway, Fremont, California 94538 (US). **BLANK, Richard M**; 4650 Cushing Parkway, Fremont, California 94538 (US).

(74) Agent: **SCHOLZ, Christian D.** et al.; Weaver Austin Villeneuve & Sampson LLP, P.O. Box 70250, Oakland, California 94612-0250 (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, 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.

WO 2023/114729 A1

(54) **Title:** HEXAPOD-BASED PEDESTAL SYSTEMS FOR USE IN SEMICONDUCTOR PROCESSING OPERATIONS

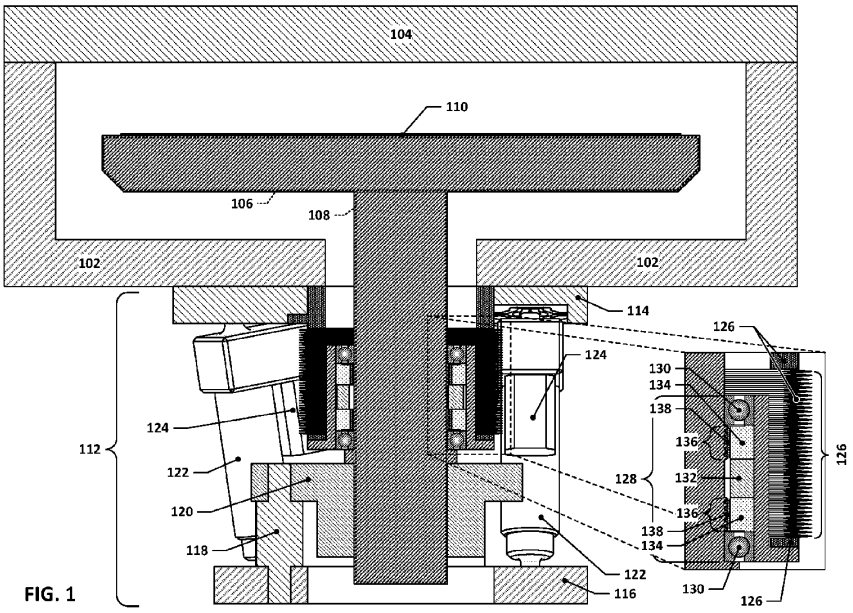


FIG. 1

(57) **Abstract:** Semiconductor processing tools with hexapod-based pedestal systems are disclosed and described. Such hexapod pedestal systems may incorporate a hexapod mechanism with a stationary mount that is connected via six linear actuators with a movable mount. The movable mount may support a pedestal located within a semiconductor processing chamber. The hexapod mechanism may be controlled so as to allow the pedestal to shift laterally so as to center the pedestal on a wafer supported by a wafer handling robot, as well as to angularly align a wafer supported thereby with the underside of a showerhead and to allow a wafer supported thereby to be subjected to any of a variety of movements during wafer processing operations that may promote increased wafer uniformity.

[Continued on next page]

(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, 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))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*