



(51) International Patent Classification:

B23K 26/082 (2014.01) B23K 26/08 (2006.01)
B23K 26/06 (2006.01) B23K 26/03 (2006.01)

(21) International Application Number:

PCT/US2024/013324

(22) International Filing Date:

29 January 2024 (29.01.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/483,360 06 February 2023 (06.02.2023) US

(71) Applicant: **ELECTRO SCIENTIFIC INDUSTRIES, INCORPORATED** [US/US]; 14523 SW Millikan Way, Beaverton, Oregon 97005 (US).

(72) Inventors: **FINN, Daragh**; 14523 SW Millikan Way, Beaverton, Oregon 97005 (US). **ALPAY, Mehmet**; 14523 SW Millikan Way, Beaverton, Oregon 97005 (US). **HALL, Tobin**; 14523 SW Millikan Way, Beaverton, Oregon 97005

(US). **PEEPLES, Mark**; 14523 SW Millikan Way, Beaverton, Oregon 97005 (US).

(74) Agent: **EATON, Kurt**; 2 Tech Drive, Suite 201, Attn: IP Department, Andover, Massachusetts 01810 (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,

(54) Title: METHOD AND APPARATUS FOR COMPENSATING FOR THERMALLY-INDUCED BEAM POINTING ERRORS IN A LASER-PROCESSING SYSTEM

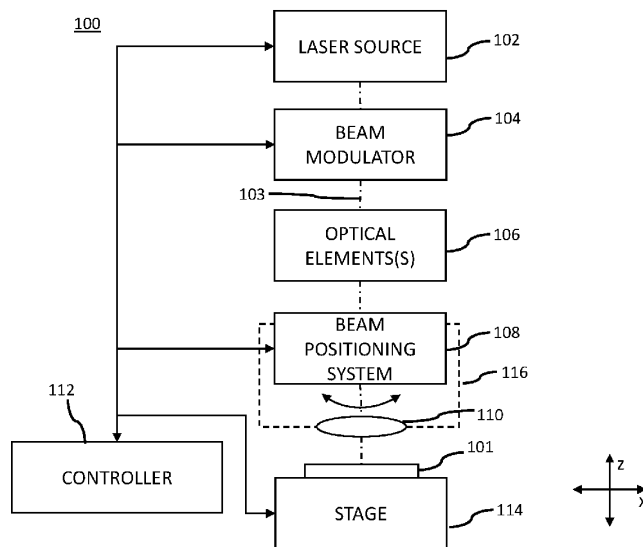


FIG. 1

(57) Abstract: A laser-processing system for processing a workpiece is adapted to estimate a thermal response of at least one of many beam path components to a beam of laser energy during a predetermined processing period while the workpiece is to be processed, generate one or more commands based at least in part on the estimated thermal response, and output the one or more commands to one or more components of the system and outputting commands to one or more components of the system to processes the workpiece during the processing period.

[Continued on next page]

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))*