

(51) International Patent Classification:
G21K 1/06 (2006.01) **G03F 7/00** (2006.01)(21) International Application Number:
PCT/EP2010/050195(22) International Filing Date:
11 January 2010 (11.01.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/152,580 13 February 2009 (13.02.2009) US(71) Applicant (for all designated States except US): **ASML NETHERLANDS B.V.** [—/NL]; De Run 6501, NL-5504 DR Veldhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GLUSHKOV, Denis** [RU/RU]; Felsenweg 18 Witten, Witten, D-58453 (DE). **BANINE, Vadim** [NL/NL]; Eendracht 21, NL-5751 SB Deurne (NL). **SJMAENOK, Leonid** [NL/NL]; Jos Francotteweg 6c, NL-6291 GP Vaals (NL). **SALASCHENKO, Nikolai** [RU/RU]; Izhorskaya str. 11 apt. 1, Nizhny, 603024 (RU). **CHKHALO, Nikolay** [RU/RU]; Kazanskoe shosse street 3, app. 264, Nizhny Novgorod city, 603136 (RU).

(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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, 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))

(54) Title: MULTILAYER MIRROR AND LITHOGRAPHIC APPARATUS

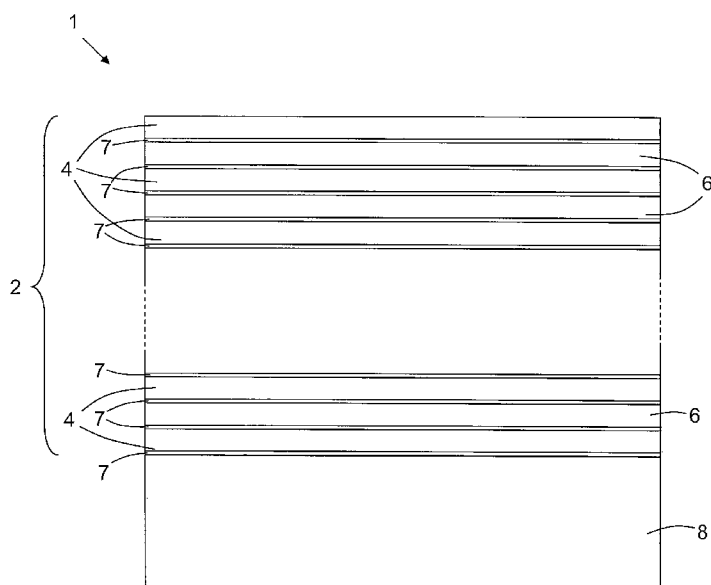


Figure 3

(57) Abstract: A multilayer mirror (7) is constructed and arranged to reflect radiation having a wavelength in the range of 2-8 nm. The multilayer mirror has alternating layers (4, 6), the alternating layers comprising a first layer and a second layer, the first and second layers being selected from the group consisting of: U and B4C layers, Th and B4C layers, La and B9C layers, La and B4C layers, U and B9C layers, Th and B9C layers, La and B layers, U and B layers, C and B layers, Th and B layers, U compound and B4C layers, Th compound and B4C layers, La compound and B9C layers, La compound and B4C layers, U compound and a B9C layers, Th compound and a B9C layers, La compound and a B layers, U compound and B layers, and Th compound and a B layers, wherein at least one of the first layers is separated from the second layer by an interlayer (7) disposed between at least one of the first layers and the second layer.