

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 September 2004 (10.09.2004)

PCT

(10) International Publication Number
WO 2004/077154 A2

(51) International Patent Classification⁷: **G03F**
(21) International Application Number:
PCT/US2004/005186
(22) International Filing Date: 23 February 2004 (23.02.2004)
(25) Filing Language: English
(26) Publication Language: English
(30) Priority Data:
60/448,530 21 February 2003 (21.02.2003) US
10/781,803 20 February 2004 (20.02.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, 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, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

Published:

- without international search report and to be republished upon receipt of that report

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(54) Title: LITHOGRAPHIC PRINTING WITH POLARIZED LIGHT

(57) Abstract: The present invention provides systems and methods for improved lithographic printing with polarized light. In embodiments of the present invention, polarized light (radially or tangentially polarized) is used to illuminate a phase-shift mask (PSM) and produce an exposure beam. A negative photoresist layer is then exposed by light in the exposure beam. A chromeless PSM can be used. In further embodiments of the present invention, radially polarized light is used to illuminate a mask and produce an exposure beam. A positive photoresist layer is then exposed by light in the exposure beam. The mask can be an attenuating PSM or binary mask. A very high image quality is obtained even when printing contact holes at various pitches in low k applications.

WO 2004/077154 A2