

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

(19) World Intellectual Property Organization
International Bureau

162162

(43) International Publication Date
15 August 2002 (15.08.2002)

PCT

(10) International Publication Number
WO 02/063394 A1(51) International Patent Classification⁷: G03F 1/08,
1/14, 7/00

(21) International Application Number: PCT/CA01/00129

(22) International Filing Date: 5 February 2001 (05.02.2001)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): QUAN-
TIScript INC. [CA/CA]; Université de Sherbrook, 2500
Université Boulevard, Sherbrooke, Québec J1K 2R1 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): DROUIN, Do-
minique [CA/CA]; 290 Priseau, Deauville, Québec J1N
3N9 (CA). LAVALLÉE, Eric [CA/CA]; 2000 Le Mon-
tagnais, Apt. 401, Sherbrooke, Québec J1K 2X9 (CA).
BEAUVAIS, Jacques [CA/CA]; 1961 Albert Skinner,
Sherbrooke, Québec J1J 1X3 (CA).(74) Agents: DUBUC, J. et al.; Goudreau Gage Dubuc, The
Stock Exchange Tower, Suite 3400, 800 Place Victoria,
P.O. Box 242, Montreal, Québec H4Z 1B9 (CA).(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,
DE, DK, DM, DZ, EE, 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,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.(84) Designated States (regional): ARIPO patent (GI, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

G00002

WO 02/063394 A1

(54) Title: FABRICATION OF STRUCTURES OF METAL/SEMICONDUCTOR COMPOUND BY X-RAY/EUV PROJECTION
LITHOGRAPHY

(57) Abstract: A lithography method for fabricating structures of etch-resistant metal-semiconductor compound on a substrate with sub-micrometer scale resolutions is described. Superposed layers of metal and semiconductor capable of reacting with each other to form etch-resistant metal/semiconductor compound are deposited on the substrate. Radiation from a X-ray/EUV source propagates through a patterned X-ray transparent/EUV reflective mask and is projected on the superposed metal and semiconductor layers. The X-ray transparent mask includes X-ray absorbing patterns imparted to the X-ray radiation while the EUV reflective mask includes EUV absorbing patterns also imparted to the EUV radiation. The energy of X-ray/EUV photons is absorbed locally by the metal and semiconductor layers. Absorption of this energy induces a reaction between the two layers responsible for the formation of etch-resistant metal/semiconductor compound with structures corresponding to the patterns imparted to the radiation by the X-ray/EUV mask. The metal layer is subsequently etched using selective plasma or wet etching, leaving the structures of etch-resistant metal/semiconductor compound intact.