

Title (en)
HIGHLY SELECTIVE IONIC LITHOGRAPHY METHOD

Title (de)
IONENSTRAHLLITHOGRAPHIE-VERFAHREN MIT SEHR HOHER SELEKTIVITÄT

Title (fr)
PROCEDE DE LITHOGRAPHIE IONIQUE A HAUTE SELECTIVITE

Publication
EP 1328967 A1 20030723 (FR)

Application
EP 01978531 A 20011015

Priority
• FR 0103188 W 20011015
• FR 0013507 A 20001023

Abstract (en)
[origin: FR2815770A1] The invention concerns a method for producing a very highly selective etching to obtain high-resolution patterns on a substrate and on industrial scale of production. The invention is characterised in that said method for etching a thin dielectric layer deposited on a semiconductor substrate (100) consists in: producing a configuration of patterns to be etched through a mask formed on the dielectric layer (101) by ultraviolet, deep or extreme ultraviolet radiation exposure (13), and revealing a photosensitive resin (102) constituting the mask; a selective interaction between the ions (10) of a beam of decelerated positive ions with multiple charge and the dielectric layer (101) which is exposed following the revelation. The beam with predetermined density ejects from said layer aggregated material (12) and forms therein zones (11) matching the patterns of the mask. A selective absorption by neutralisation (103) is produced between the ions of the beam and the mask opposite said ions.
[origin: FR2815770A1] A method for engraving a thin dielectric layer laid on a semiconductor substrate (100) consists of: (a) producing a configuration of engraving motifs (200); (b) producing a selective interaction between some ions (10); and (c) selectively absorbing by neutralization occurring between the ions of the beam and the mask facing these ions. A method for engraving a thin dielectric layer laid on a semiconductor substrate (100) consists of: (a) producing a configuration of engraving motifs (200) through a mask formed on the dielectric layer (101) by insulation with deep or extreme ultraviolet radiation and revelation of a photosensitive resin (102) making up the mask; (b) producing a selective interaction between some ions (10), from a beam of positive multicharged decelerated ions, and the dielectric layer that is visible following the revelation, the beam of a predetermined density ejects from this layer some grains of material (12) and forms them into zones (111) conforming to the motifs of the mask; and (c) selectively absorbing by neutralization occurring between the ions of the beam and the mask facing these ions.

IPC 1-7
H01L 21/311; H01J 37/32

IPC 8 full level
H01L 21/311 (2006.01)

CPC (source: EP)
H01L 21/31105 (2013.01)

Citation (search report)
See references of WO 0235596A1

Designated contracting state (EPC)
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)
FR 2815770 A1 20020426; AU 1063702 A 20020506; EP 1328967 A1 20030723; WO 0235596 A1 20020502

DOCDB simple family (application)
FR 0013507 A 20001023; AU 1063702 A 20011015; EP 01978531 A 20011015; FR 0103188 W 20011015