

Title (en)
BIREFRINGENCE MINIMIZING FLUORIDE CRYSTAL OPTICAL VUV MICROLITHOGRAPHY LENS ELEMENTS AND OPTICAL BLANKS THEREFOR

Title (de)
LINSENELEMENTEN FÜR VUV-MIKROLITHOGRAPHIE VON DOPPELBRECHUNG-MINIMIERENDEN FLUORIDKRISTALLEN UND ROHLINGEN DAFÜR

Title (fr)
LENTILLE OPTIQUE POUR MICROLITHOGRAPHIE VUV A CRISTAUX DE FLUORURE QUI MINIMISE L'EFFET BIREFRINGENT, ET PARAISONS OPTIQUES DE CELLE-CI

Publication
EP 1224497 A4 20030827 (EN)

Application
EP 00943048 A 20000622

Priority
• US 0017165 W 20000622
• US 14115599 P 19990625

Abstract (en)
[origin: WO0101182A1] A birefringence minimizing fluoride crystal VUV optical lithography lens element (50) is provided for use with lithography wavelengths less than 230 nm. The VUV lithography lens element has an optical axis encompassed by a lens perimeter with the fluoride crystal lens having a variation (58) in crystallographic orientation direction which tilts away from the optical center axis (54) towards the lens perimeter to provide minimal birefringence.

IPC 1-7
G02B 13/14; **G02B 9/00**; **F21V 9/06**

IPC 8 full level
G02B 1/02 (2006.01); **G02B 13/14** (2006.01); **G03F 7/20** (2006.01)

CPC (source: EP)
G02B 1/08 (2013.01); **G02B 13/143** (2013.01); **G03F 7/70216** (2013.01); **G03F 7/70966** (2013.01)

Citation (search report)
• [PA] EP 0942297 A2 19990915 - NIPPON KOGAKU KK [JP]
• [A] UNNO Y: "Distorted wave front produced by a high-resolution projection optical system having rotationally symmetric birefringence", APPLIED OPTICS, OPTICAL SOCIETY OF AMERICA, WASHINGTON, US, vol. 37, no. 31, 1 November 1998 (1998-11-01), pages 7241 - 7247, XP002219376, ISSN: 0003-6935
• [A] "CALCIUM FLUORIDE FOR HIGH-PERFORMANCE OPTICS: PROBLEMS AND SOLUTIONS", MATERIALS AND DESIGN, LONDON, GB, vol. 13, no. 3, 1992, pages 167 - 168, XP001000891, ISSN: 0261-3069
• [A] OLDHAM W G ET AL: "193-NM LITHOGRAPHIC SYSTEM LIFETIMES AS LIMITED BY UV COMPACTION", SOLID STATE TECHNOLOGY, COWAN PUBL.CORP. WASHINGTON, US, vol. 40, no. 4, 1 April 1997 (1997-04-01), pages 95 - 96, 98, 100, 1, XP000686899, ISSN: 0038-111X
• See references of WO 0101182A1

Designated contracting state (EPC)
DE FR GB NL

DOCDB simple family (publication)
WO 0101182 A1 20010104; EP 1224497 A1 20020724; EP 1224497 A4 20030827; TW 518425 B 20030121

DOCDB simple family (application)
US 0017165 W 20000622; EP 00943048 A 20000622; TW 90100475 A 20010108