

Title (en)  
OBJECTIVE LENS CONSISTING OF CRYSTAL LENSES

Title (de)  
OBJEKTIV MIT KRISTALL-LINSEN

Title (fr)  
OBJECTIF LENTILLE EN CRISTAL

Publication  
**EP 1483614 A2 20041208 (DE)**

Application  
**EP 03708221 A 20030312**

Priority  
• DE 10210782 A 20020312  
• EP 0302549 W 20030312

Abstract (en)  
[origin: WO03077007A2] An objective lens, especially a projection lens for a microlithographic projection illumination system comprising at least one fluoride crystal lens. The disruptive effect of double refraction is reduced by the fact that the lens is a lens (100) having an axis which is approximately perpendicular in relation to the crystal planes {100} or the equivalent crystal planes of the fluoride crystal. In objective lenses consisting of at least two fluoride crystal lenses it is advantageous to arrange the fluoride crystal lenses in such a way that they are skewed in relation to each other. The lens axes of the fluid crystal lenses can point in direction <111> or <110> in addition to direction <100> of the crystal. The disruptive effect of double refraction can also be reduced by using groups with skewed (110) lenses and groups with (111) lenses or groups with (110) lenses. The disruptive effect of double refraction can be further reduced by providing an optical element with a compensating coating.

IPC 1-7  
**G02B 13/00**

IPC 8 full level  
**G02B 1/02** (2006.01); **G02B 5/30** (2006.01); **G02B 13/18** (2006.01); **G02B 13/24** (2006.01); **G03F 7/20** (2006.01); **H01L 21/027** (2006.01)

CPC (source: EP)  
**G02B 1/02** (2013.01); **G02B 5/3083** (2013.01); **G03F 7/70566** (2013.01); **G03F 7/70966** (2013.01)

Citation (search report)  
See references of WO 03077007A2

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)  
**DE 10210782 A1 20031009**; AU 2003212341 A1 20030922; AU 2003212341 A8 20030922; CN 1653359 A 20050810; EP 1483614 A2 20041208; JP 2005520187 A 20050707; WO 03077007 A2 20030918; WO 03077007 A3 20040408

DOCDB simple family (application)  
**DE 10210782 A 20020312**; AU 2003212341 A 20030312; CN 03810840 A 20030312; EP 0302549 W 20030312; EP 03708221 A 20030312; JP 2003575170 A 20030312