

[SS 14] 11 and pattern

Results in EPODOC 23

[SS 15] 11 and (ridge or valley)

Results in EPODOC 6

[SS 16] ..li



1/6 © EPODOC / EPO

PN - [CN103197377](#) A 20130710

PNFP - CN103197377B B 20141126

PR - CN20131130948 20130416

AP - CN20131130948 20130416

DT - I

CT - || STSE (A)

[KR100821364B](#) B1 20080411 [A]

[A] 1

全文

[CN1743880](#) A 20060308 [A] (UNIV ZHEJIANG [CN])

[A] 1

全文

[CN1588233](#) A 20050302 [A] (UNIV ZHEJIANG [CN])

[A] 1

全文

[CN101609180](#) A 20091223 [A] (UNIV HUAZHONG SCIENCE TECH [CN])

[A] 1

全文

CTNP - || STSE (A)

[A] 张兵 等,

"聚合物脊形光波导设计", <<光电子激光>>, (20030531), vol. 14, no. 5, PAGE 445 - 448

[A] 1

第445-448页

[A] 邢汝冰 等,

"脊形聚合物光波导制备及理论分析", <<发光学报>>, (20010228), vol. 22, no. 1, PAGE 80 - 84

[A] 1

第80-84页

[A] 周建华 等,

"PMMA脊形光波导的设计与场分析", <<光电子技术>>, (20061231), vol. 26, no. 4, PAGE 250 - 254

[A] 1

第250-254页

PA - (A B)
UNIV ZHEJIANG

TI - (A B)
Method for preparing **ridge**-shaped polymer **optical** waveguide

AB - (A)
The invention discloses a method for preparing **ridge**-shaped polymer **optical** waveguide. The method comprises the following steps: 1. silicon dioxide of 6-8 micrometers is grown on a silicon substrate to serve as a waveguide lower package layer through plasma enhancement chemical **vapor deposition**; 2. a polymer **film** is obtained through a spin coating process, and the thickness of the polymer **film** is controlled through regulation of rotation speed of spin coating; 3. empty exposure is conducted on the whole polymer **film** by means of a photolithographic process, and a **ridge**-shaped waveguide flat plate layer is formed through cross-linking reaction solidification; 4. a second polymer **film** is obtained on the upper surface of the **ridge**-shaped waveguide flat plate layer 3 by means of the spin coating process; and 5. the second polymer **film** is exposed to form a polymer **ridge**-shaped waveguide **ridge structure** part through a photolithographic mask blank by means of the photolithographic process. The method is simple in manufacturing process, only conventional processes of spin coating and photoetching are used, dry etching and other complex processes are not needed, and the **ridge**-shaped polymer waveguide can be prepared.

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PN - [JP2000081522](#) A 20000321

PR - JP19980251585 19980904

AP - JP19980251585 19980904

DT - I

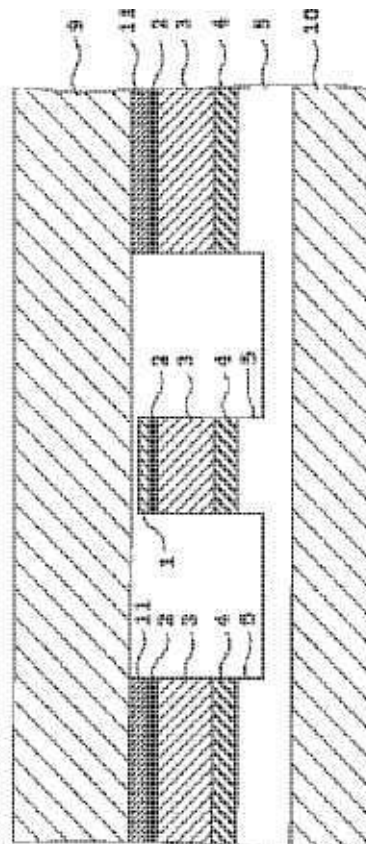
FI - G02B6/12&A; G02B6/122

FT - 2H047/AA05; 2H047/AA15;
2H047/DD04; 2H047/EE21;
2H047/EE24; 2H047/GG02;
2H047/GG07; 2H047/HH08;
2H047/KA05; 2H047/KA15;
2H047/NA04; 2H047/PA21;
2H047/PA24; 2H047/QA02;
2H047/QA07; 2H047/RA08;
2H147/AB02; 2H147/AB05;
2H147/BA05; 2H147/BA15;
2H147/BG11; 2H147/CA27;
2H147/DA12; 2H147/EA12A;
2H147/EA12B; 2H147/EA12C;
2H147/FA06; 2H147/GA13

PA - NIPPON TELEGRAPH & TELEPHONE

TI - WAVEGUIDE TYPE **OPTICAL**
ELEMENT

AB - PROBLEM TO BE SOLVED: To



prevent a **ridge** from breaking by pressure from a preventing plate against intrusion of a dielectric **film** by forming a part of equal height to or higher than an electrode in the region where a **ridge optical** waveguide is held.

SOLUTION: An n-InP clad 5, InGaAlAs/InAlAs multiple quantum well core 4, p-InP clad 3, and p+-InGaAs gap 2 are laminated on a semi-insulating InP substrate 10. This multilayer **structure** is etched into a **pattern** having a **ridge optical** waveguide and the region which interposes the **ridge** and which has a part to stably hold a preventing plate 9 against intrusion of a dielectric **film**, and the center electrode 1 and ground electrodes 11 are formed. Then the plate 9 is disposed on the upper face of the **optical** element, and an antireflection **film** is **vapor deposited** only on the end face of the **optical** element. In this method, even when the plate 9 is pressed on the upper face, the lower face of the plate 9 does not touch the upper face of the center electrode 1 so that no pressure is added to the **ridge** of the **optical** waveguide.

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PN - [JPH1164664](#) A 19990305

PR - JP19970230544 19970827

AP - JP19970230544 19970827

DT - I

FI - C01D15/00; C01G35/00&C; G02B6/12&M; G02B6/12&N; G02B6/12&371; G02B6/132; G02B6/136

FT - 2H047/AA05; 2H047/EE12; 2H047/EE21; 2H047/EE24; 2H047/GG03; 2H047/GG07; 2H047/KA05; 2H047/PA12; 2H047/PA21; 2H047/PA24; 2H047/QA03; 2H047/QA07; 2H147/AB02; 2H147/AB32; 2H147/BA05; 2H147/EA05B; 2H147/EA05C; 2H147/EA37A; 2H147/EA39C; 2H147/FA06; 2H147/FA09; 2H147/FA18; 2H147/FA25; 2H147/FB12; 2H147/FC02; 2H147/FC04; 2H147/FC05; 2H147/FC06; 2H147/FF08; 2H147/GA19;

4G048/AA04; 4G048/AB02; 4G048/AB04; 4G048/AC08; 4G048/AD02

- PA - OKI ELECTRIC IND CO LTD
- TI - PRODUCTION OF **OPTICAL** WAVEGUIDE
- AB - PROBLEM TO BE SOLVED: To lower the propagation loss determined by light scattering at the side walls of waveguides by forming the **ridge**-like waveguides on a lithium niobate substrate, then forming a clad layer consisting of lithium tantalum niobate in the state of covering the surfaces of the waveguides. SOLUTION: The lithium niobate substrate is used for a substrate 11 and Ti patterns 12 are formed by etching a Ti **film** on the substrate 11 (1). The Ti of the Ti patterns 12 is diffused into the substrate 11 by executing a thermal diffusion treatment and the **optical** waveguide 13 of an approximately semicircular section is formed on the surface side of the substrate 11 (2). The etching mask 14 consisting of the Ti **film** is formed on the **optical** waveguide 13 by using a **film** forming technic, such as, **vapor depositing**, sputtering (3). The substrate 11 is etched to form the **ridge**-like waveguide (**ridge structure**) 15 including the **optical** waveguide 13 (4). A lithium tantalum niobate **film** is formed on the substrate 11 having the **ridge**-shaped waveguide 15 by a sol-gel method, by which the clad layer 16 is formed (5).

4/6 © EPODOC / EPO

- PN - [JPH0389325](#) A 19910415
- PR - JP19890224477 19890901
- AP - JP19890224477 19890901
- DT - I
- FI - G02B6/12&J; G02B6/12&363; G02F1/295
- FT - 2H047/AA05; 2H047/EE06; 2H047/EE24; 2H047/GG02; 2H047/HH00; 2H047/KA05; 2H047/PA06; 2H047/PA24; 2H047/QA02; 2H047/RA00; 2H147/AB32; 2H147/AC01; 2H147/BA07; 2H147/BG04; 2H147/CA11; 2H147/EA12A; 2H147/EA12B; 2H147/EA12C; 2H147/FC02; 2H147/FE05; 2K002/AB03; 2K002/BA08; 2K002/CA13; 2K002/CA22; 2K002/DA11; 2K002/EA07; 2K002/EA27; 2K002/FA02; 2K002/FA30; 2K002/HA03
- PA - HIKARI GIJUTSU KENKYU KAIHATSU
- TI - SEMICONDUCTOR **OPTICAL** DEFLECTING ELEMENT
- AB - PURPOSE: To allow the effective current implantation to a waveguide and further to drastically lessen the influence on an exit angle by the temp. rise of a current injection region by adopting the **structure** to confine light in the transverse direction of the waveguide as well and taking out the radiation light from the direction of a semiconductor substrate. CONSTITUTION: A clad layer 2 of n type AlGaAs, a non-doped AlGaAs active layer 3, a barrier layer 4 consisting of p type AlGaAs and a guide layer 5 are epitaxially grown on an n type GaAs substrate 1 to form a diffraction grating 6. A clad layer 7 consisting of p type AlGaAs and a contact layer 8 are in succession regrown. A **ridge** 12 is formed on this wafer and an SiO₂ **film** 9 for narrowing the current and an electrode 10a are formed by **vapor deposition**. On the other hand, an electrode 10b is **deposited** by evaporation on the substrate side and, thereafter, the substrate 1 is selectively etched up to the clad layer 2 to form a stripe 13. The resulting element with the junction positioned downward is mounted to a heat sink. The change in the exit angle corresponding to the implanted current value is obtd. when the current is implanted in a forward direction. The current implantation to the waveguide is

effectively executed in this way and the change in the exit angle by the temp. change at the time of the current implantation is reduced.

5/6 © EPODOC / EPO

PN - [JPS60103325](#) A 19850607

PR - JP19830210937 19831111

AP - JP19830210937 19831111

DT - I

CCI - [G02F1/3138](#)

FI - G02B26/08&Z; G02F1/015; G02F1/313

FT - 2H041/AA15; 2H041/AA16; 2H041/AB26; 2H041/AZ00; 2H041/AZ08; 2H079/AA02; 2H079/AA12; 2H079/BA01; 2H079/CA05; 2H079/DA16; 2H079/DA26; 2H079/EA04; 2H079/EB04; 2H079/EB14; 2H079/GA05; 2H079/HA12; 2H079/HA13; 2K002/AB04; 2K002/BA06; 2K002/CA13; 2K002/DA08; 2K002/DA11; 2K002/EB03; 2K002/EB07; 2K002/FA20; 2K002/GA07; 2K002/HA07; 2K002/HA08

PA - HITACHI LTD; HITACHI CABLE

TI - WAVEGUIDE TYPE **OPTICAL** SWITCH

AB - PURPOSE:To drive an **optical** switch with application of a small voltage and simplify its **structure** by forming light guides which cross each other slantingly on a compound semiconductor substrate and applying an electric field to a comb- shaped electrode provided on the intersection part in the thickness direction of the light guides, and thus performing **optical** switching. CONSTITUTION:An epitaxial **film** 6 is formed on the substrate 6, two crossing light guide patterns are drawn on the epitaxial **film** 6 with photoresist, and then **ridge** type waveguides 7 and 8 are formed by ion milling. Then, the comb-shaped electrode 9 is formed at the intersection of the two waveguides by an Al **vapor deposition** and a lift-off method, and a voltage is applied from a reverse surface electrode 10 formed by **vapor-depositing** Al on the reverse surface of the substrate 5 to the comb-shaped electrode 9. Almost all of the applied electric field is converged on a waveguide layer near the surface to realize switching characteristics, e. g. a -20dB extinction ratio with a 10V applied voltage.

6/6 © EPODOC / EPO

PN - [JPH10223989](#) A 19980821

PR - JP19970027480 19970212

AP - JP19970027480 19970212

DT - I

FI - G02B6/12&B; G02B6/12&301; G02B6/122&311; G02B6/124; G02B6/126; G02B6/42; H01L31/02&C; H01S3/18; H01S5/00; H01S5/026&612; H01S5/026&618

FT - 2H037/AA01; 2H037/BA04; 2H037/CA33; 2H037/CA40; 2H037/DA03; 2H037/DA04; 2H047/AA04; 2H047/AA13; 2H047/AB06; 2H047/BB03; 2H047/CC05; 2H047/DD04; 2H047/EE06; 2H047/EE14; 2H047/GG02; 2H047/HH08; 2H047/KA04; 2H047/KA13; 2H047/KB06; 2H047/LA03; 2H047/MA05; 2H047/NA04; 2H047/PA06; 2H047/PA14; 2H047/QA02; 2H047/RA08; 2H047/TA42; 2H047/TA43; 2H137/AB06; 2H137/BA01; 2H137/BB04; 2H137/BB14; 2H137/BB25; 2H137/CA13; 2H137/CA13A; 2H137/CA19; 2H137/CA19F; 2H137/CA73; 2H147/AA01; 2H147/AB02; 2H147/AB04; 2H147/AB06;

2H147/AB09; 2H147/AB11; 2H147/AB24; 2H147/BA11; 2H147/BA15; 2H147/BB02;
 2H147/BB03; 2H147/BC05; 2H147/BD08; 2H147/BD11; 2H147/BD16; 2H147/BE13;
 2H147/BG19; 2H147/CA01; 2H147/CA13; 2H147/CA27; 2H147/CB01; 2H147/CB03;
 2H147/CC02; 2H147/CC07; 2H147/CC14; 2H147/CD10; 2H147/DA08; 2H147/EA12A;
 2H147/EA12B; 2H147/EA12C; 2H147/EA13A; 2H147/EA13B; 2H147/EA13C;
 2H147/EA32B; 2H147/EA33B; 2H147/FA03; 2H147/FA04; 2H147/FA06; 2H147/FA13;
 2H147/FC02; 2H147/FE06; 2H147/GA06; 2H147/GA19; 2H147/GA20; 2H147/GA29;
 5F073/AA08; 5F073/AA13; 5F073/AA26; 5F073/AA44; 5F073/AA64; 5F073/AA74;
 5F073/AA83; 5F073/AB13; 5F073/AB28; 5F073/BA02; 5F073/CA02; 5F073/CA04;
 5F073/CA12; 5F073/CA24; 5F073/CB02; 5F073/CB07; 5F073/DA05; 5F073/EA23;
 5F073/EA28; 5F073/EA29; 5F088/AB07; 5F088/BA13; 5F088/BB01; 5F088/CB04;
 5F088/CB10; 5F088/EA09; 5F088/GA05; 5F088/JA14; 5F173/AA26; 5F173/AB14;
 5F173/AB63; 5F173/AD18; 5F173/AG12; 5F173/AH14; 5F173/AP32; 5F173/AP44;
 5F173/AP54; 5F173/AR23; 5F173/AR65; 5F173/MD03; 5F173/MD63; 5F173/ME77;
 5F173/ME87

- PA - HITACHI LTD; NIPPON TELEGRAPH & TELEPHONE
- TI - WAVEGUIDE TYPE **OPTICAL**ELEMENT
- AB - PROBLEM TO BE SOLVED: To reduce the reactive current of an **optical** element by forming a current/voltage impressing electrode **structure** in the partial area of an **optical** waveguide and an insulating part in a buffer layer, a clad layer, or both of the buffer and clad layers positioned in a light beam spot transforming area. SOLUTION: After a silicon oxide **film** 106 is formed on the whole surface of a substrate 102, proton implanted areas 107 are formed in a waveguide area having a uniform **film** thickness and a thick tapered area except parts of about 50[μm] in thickness by implanting protons into a clad layer 104 through ion implantation by using a photoresist as a masking material. After removing the photoresist mask, silicon oxide films 106 which are formed on the **ridge** waveguide and into which the protons are not implanted are removed. Then an upper electrode 108 is formed by using an oblique **vapor deposition** method so that electrodes may be formed on the side walls of the **ridge**. Electrode windows are formed only in the parts which do not contains implanted protons. The reactive current of a waveguide type **optical** element can be reduced by providing the proton-implanted areas in no-current injected areas.