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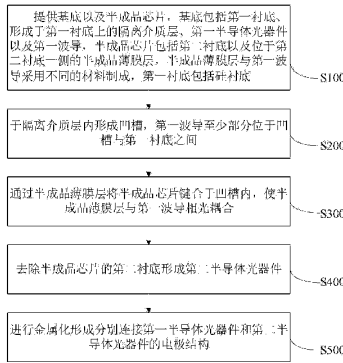
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(54) Title: OPTICAL CHIP STRUCTURE AND MANUFACTURING METHOD THEREFOR

(54) 发明名称: 光芯片结构及其制备方法



[图1]

- S100 Provide a base and a semi-finished chip, wherein the base comprises a first substrate, an isolation dielectric layer formed on the first substrate, a first semiconductor optical device, and a first waveguide, the semi-finished chip comprises a second substrate and a semi-finished thin film layer located on one side of the second substrate, the semi-finished thin film layer and the first waveguide are made of different materials, and the first substrate comprises a silicon substrate
- S200 Form a recess in the isolation dielectric layer, wherein the first waveguide is at least partially located between the recess and the first substrate
- S300 Bond the semi-finished chip in the recess by means of the semi-finished thin film layer, so that the semi-finished thin film layer is optically coupled to the first waveguide
- S400 Remove the second substrate of the semi-finished chip to form a second semiconductor optical device
- S500 Carry out metalization to form an electrode structure separately connected to the first semiconductor optical device and the second semiconductor optical device

(57) Abstract: The present application relates to an optical chip structure and a manufacturing method therefor. The method comprises: providing a base and a semi-finished chip, wherein the base comprises a first substrate, an isolation dielectric layer formed on the first substrate, a first semiconductor optical device, and a first waveguide, the semi-finished chip comprises a second substrate and a semi-finished thin film layer located on one side of the second substrate, the semi-finished thin film layer and the first waveguide are made of different materials, and the first substrate comprises a silicon substrate; forming a recess in the isolation dielectric layer, wherein the first waveguide is at least partially located between the recess and the first substrate; bonding the semi-finished chip in the recess by means of the semi-finished thin film layer, so that the semi-finished thin film layer is optically coupled to the first waveguide; removing the second substrate of the semi-finished chip to form a second semiconductor optical device; and carrying out metalization to form an electrode structure separately connected to the first semiconductor optical device and the second semiconductor optical device.

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HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO,
PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF,
CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN,
TD, TG)。

根据细则4.17的声明:

- 关于发明人身份(细则4.17(i))
- 关于申请人有权申请并被授予专利(细则4.17(ii))
- 发明人资格(细则4.17(iv))

本国际公布:

- 包括国际检索报告(条约第21条(3))。

(57) 摘要: 本申请涉及一种光芯片结构及其制备方法, 包括: 提供基底以及半成品芯片, 基底包括第一衬底、形成于第一衬底上的隔离介质层、第一半导体光器件以及第一波导, 半成品芯片包括第二衬底以及位于第二衬底一侧的半成品薄膜层, 半成品薄膜层与第一波导采用不同的材料制成, 第一衬底包括硅衬底; 于隔离介质层内形成凹槽, 第一波导至少部分位于凹槽与第一衬底之间; 通过半成品薄膜层将半成品芯片键合于凹槽内, 使半成品薄膜层与第一波导相光耦合; 去除半成品芯片的第二衬底形成第二半导体光器件; 进行金属化形成分别连接第一半导体光器件和第二半导体光器件的电极结构。