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(54) ORGANIC ELECTROLUMINESCENCE DEVICE AND MANUFACTURING METHOD THEREOF, AND DISPLAY DEVICE

ORGANISCHE ELEKTROLUMINESZENZVORRICHTUNG, HERSTELLUNGSVERFAHREN DAFÜR SOWIE ANZEIGEVORRICHTUNG DAMIT

DISPOSITIF ÉLECTROLUMINESCENT ORGANIQUE ET SON PROCÉDÉ DE FABRICATION, ET DISPOSITIF D'AFFICHAGE

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(73) Proprietor: **BOE Technology Group Co., Ltd.**
Beijing 100015 (CN)

(72) Inventors:
- **FUJINO, Seiji**
  Beijing 100176 (CN)
- **HUANG, Guodong**
  Beijing 100176 (CN)
- **ZENG, Qinghui**
  Beijing 100176 (CN)

(74) Representative: **Klunker IP**
Patentanwälte PartG mbB
Destouchesstraße 68
80796 München (DE)

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EP 3 226 321 B1

Description

TECHNICAL FIELD

[0001] The present invention relates to an organic electroluminescent device and a manufacturing method thereof, and a display device.

BACKGROUND

[0002] In a display technical field, an organic electroluminescent device is an important structure to realize flexible display.

[0003] Same as other display devices, a narrow bezel design of the organic electroluminescent device is also an important research direction for those skilled in the art.

[0004] In a related art, as shown in FIG. 1 and FIG. 2, an organic electroluminescent device comprises a base substrate 01, a buffer layer 02, a thin film transistor TFT switch wiring located in an effective display region, a peripheral wiring structure located in a non-display region, an organic electroluminescent structure 04 formed in the effective display region, a packaging substrate 06, an anti-oxidation structure 05 formed between the packaging substrate 06 and the organic electroluminescent structure 04; the peripheral wiring structure has a peripheral wiring 031, a welding part 032, a connecting circuit wiring 033 for connecting the welding part 032 and the peripheral wiring 031. A welding terminal 08 of a flexible printed circuit board 07 is welded on the welding part 032, to realize electrical connection between the flexible printed circuit board 07 and the peripheral wiring 031.

[0005] However, in the related art, because the welding terminal 08 of the flexible printed circuit board 07 is welded on a side of the welding part 032 away from the base substrate 01, it is necessary to bend the flexible printed circuit board 07 to the side of the base substrate 01 away from the packaging substrate 06, so that a bending width for the flexible printed circuit board 07 needs to be reserved on the side of the organic electroluminescent device corresponding to the flexible printed circuit board 07, i.e., the width D as shown in FIG. 1. Therefore, the resulted organic electroluminescent device may have a relatively wide bezel.

[0006] US 2010 148 209 A1 discloses a light-emitting device having a structure in which an external connection portion can be connected and a method for manufacturing the light-emitting device. A light-emitting device includes a lower support, a base insulating film over the lower support which has a through-hole, a light-emitting element over the base insulating film, and an upper support over the light-emitting element. An electrode is provided in the through-hole, and an external connection terminal electrically connected to the electrode is provided below the base insulating film. The external connection terminal is electrically connected to the external connection portion and functions as a terminal that inputs a signal or a power supply into the light-emitting device.

[0007] US 2014 319 496 A1 discloses an organic light emitting diode display device including: a first substrate; a conductive line formed on a first surface of the first substrate; an organic light emitting diode and an encapsulation layer on the conductive line; a second substrate on the encapsulation layer; a conductive pad connected to the conductive line and arranged in a through hole passing through the first substrate; and a driving circuit unit on a second surface opposite the first surface of the first substrate and connected to the conductive pad.

[0008] US 2014 063 393 A1 discloses an electronic device display having a color filter layer, a thin-film-transistor layer, and a layer of liquid crystal material. The display has a display cover layer such as a layer of glass or plastic. Adhesive is used to attach the upper polarizer to the display cover layer. The thin-film transistor layer has a substrate with upper and lower surfaces. Thin-film-transistor circuitry is formed on the upper surface. A display driver integrated circuit is mounted to the lower surface or a flexible printed circuit and is coupled to the thin-film-transistor circuitry using wire bonding wires. Through vias that are formed through the thin-film-transistor layer substrate is used in coupling the thin-film-transistor circuitry to the display driver integrated circuit.

SUMMARY

[0009] It is an object of the present invention to provide an organic electroluminescent device, a display device comprising the organic electroluminescent device, and a manufacturing method of the organic electroluminescent device in which and by which the bezel of the resulted organic electroluminescent device may be reduced.

[0010] The object is achieved by the features of the respective independent claims. Further embodiments are defined in the corresponding dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] In order to clearly illustrate the technical solution of the embodiments of the disclosure, the drawings of the embodiments or used in descriptions of related technologies will be briefly described in the following; it is obvious that the described drawings are only related to some embodiments of the disclosure and thus are not limitative of the disclosure.

FIG. 1 is a structural schematic diagram of an organic electroluminescent device in a related art;

FIG. 2 is a distribution schematic diagram of a peripheral wiring structure and a flexible printed circuit board in the organic electroluminescent device having a structure shown in FIG. 1;

FIG. 3 is a structural schematic diagram of an organic electroluminescent device provided by Example 1 not forming part of the claimed invention;

FIG. 4a is a structural schematic diagram of an or-

ganic electroluminescent device provided by Embodiment 1 of the present disclosure;

FIG. 4b is a distribution schematic diagram of wirings in a second wiring layer of the organic electroluminescent device having the structure shown in FIG. 4a;

FIG. 4c is a distribution schematic diagram of wirings in a first wiring layer of the organic electroluminescent device having the structure shown in FIG. 4a;

FIG. 5a is a structural schematic diagram of an organic electroluminescent device provided by Embodiment 2 of the present disclosure;

FIG. 5b is a distribution schematic diagram of wirings in a second wiring layer of the organic electroluminescent device having the structure shown in FIG. 5a;

FIG. 5c is a distribution schematic diagram of wirings in a first wiring layer of the organic electroluminescent device having the structure shown in FIG. 5a;

FIG. 6a is a structural schematic diagram of an organic electroluminescent device provided by Embodiment 3 of the present disclosure;

FIG. 6b is a distribution schematic diagram of wirings in a fifth wiring layer of the organic electroluminescent device having the structure shown in FIG. 6a;

FIG. 6c is a distribution schematic diagram of wirings in a fourth wiring layer of the organic electroluminescent device having the structure shown in FIG. 6a;

FIG. 6d is a distribution schematic diagram of wirings in a third wiring layer of the organic electroluminescent device having the structure shown in FIG. 6a.

DETAILED DESCRIPTION

[0012] Hereinafter, the technical solutions of the embodiments of the present disclosure will be described in a clearly and fully understandable way in connection with the drawings related to the embodiments of the disclosure. It is obvious that the described embodiments are just a part but not all of the embodiments of the disclosure. Based on the described embodiments herein, those skilled in the art can obtain other embodiment(s), without any inventive work, which should be within the scope of the disclosure.

[0013] Embodiments of the present disclosure provide an organic electroluminescent device and a manufacturing method thereof, and a display device. No bending space for a flexible printed circuit board is needed in a bezel of the organic electroluminescent device, so that a width of the bezel of the organic electroluminescent device can be reduced.

[0014] As shown in FIG. 3, an organic electroluminescent device provided by non-inventive Example 1 of the present disclosure comprises a base substrate 1, a packaging structure 7, an organic electroluminescent structure 5 located between the base substrate 1 and the packaging structure 7, and a flexible printed circuit board FPC 4. The base substrate 1 is provided with a peripheral wiring structure 3 electrically connected with an internal wiring of the organic electroluminescent structure 5. The peripheral wiring structure 3 includes a welding part 32. The base substrate 1 is provided with a concave part. The concave part is opened on a surface of the base substrate 1 away from the organic electroluminescent structure 5 to expose the welding part 32. A welding terminal 41 of the FPC 4 is located within the concave part and welded on the welding part 32.

[0015] In the organic electroluminescent device described above, the base substrate 1 is provided with a concave part which is opened on the surface of the base substrate 1 away from the organic electroluminescent structure 5 to expose the welding part 32. The welding terminal 41 of the flexible printed circuit board 4 directly is inserted into the concave part from a side of the base substrate 1 away from the organic electroluminescent structure 5, and is welded onto the welding part 32, to realize electrical connection between the flexible printed circuit board 4 and the peripheral wiring structure 3. Because the flexible printed circuit board 4 is not needed to be bended from a side of the welding part 32 away from the base substrate 1 to a side of the base substrate 1 away from the organic electroluminescent structure 5, a bending space for the flexible printed circuit board 4 does not need to be reserved in a bezel of the organic electroluminescent device, so that the width of the bezel of the organic electroluminescent device can be reduced.

[0016] Further refer to FIG. 3, in an example, the packaging structure 7 described above can be a packaging substrate. A buffer layer 2 is arranged between the base substrate 1 and the peripheral wiring structure 3. A chamber 6 is formed between the organic electroluminescent structure 5 and the packaging structure 7. Nitrogen, inert gas, resin or desiccant can be filled into the chamber 6 so as to improve barrier property to water, oxygen and so on.

[0017] Of course, the base substrate 1 can be a flexible base substrate, and meanwhile the packaging structure 7 is a flexible packaging film, so that the resulted organic electroluminescent device is a flexible display device. Herein, the base substrate can be a PI film of a carrying board structure, and the packaging structure 7 can be a packaging film formed by organic thin films and inorganic thin films alternatively overlapping with each other.

[0018] In an example, the peripheral wiring structure 3 further includes a peripheral wiring 31 which is directly electrically connected with the internal wiring of the organic electroluminescent structure 5, and a diffusion circuit wiring for connecting the welding part 32 and the peripheral wiring 31.

[0019] Inventive Embodiment 1 of the present disclosure provides an organic electroluminescent device, as shown in FIG. 4a to FIG. 4c. FIG. 4a is a structural schematic diagram of an organic electroluminescent device provided by Embodiment 1 of the present disclosure; FIG. 4b is a distribution schematic diagram of wirings in a second wiring layer of the organic electroluminescent

device having the structure shown in FIG. 4a; and FIG. 4c is a distribution schematic diagram of wirings in a first wiring layer of the organic electroluminescent device having the structure shown in FIG. 4a. In the organic electroluminescent device provided by Embodiment 1 of the present disclosure, a base substrate 1, a packaging structure 7, an organic electroluminescent structure 5 located between the base substrate 1 and the packaging structure 7, and a flexible printed circuit board FPC 4 are arranged in a way similar to Example 1, and related description thereof is omitted herein. Hereinafter, differences between the organic electroluminescent device provided by Embodiment 1 and the organic electroluminescent device provided by Example 1 are described in detail.

[0020] As shown in FIG. 4a, in the organic electroluminescent device provided by Embodiment 1 of the present disclosure, the peripheral wiring structure 3 is arranged in two layers, that is, a first wiring layer 34 and a second wiring layer 33. Herein, the first wiring layer 34 is located between the second wiring layer 33 and the base substrate 1, and an insulating layer 8 is arranged between the first wiring layer 34 and the second wiring layer 33. As shown in FIG. 4c, the welding part 32, the diffusion circuit wiring and a first portion of the peripheral wiring are formed on the first wiring layer 34; a second portion of the peripheral wiring and a contact part are arranged on the second wiring layer 33. The portion of the peripheral wiring structure 3 arranged on the first wiring layer 34 and the portion of the peripheral wiring structure 3 arranged on the second wiring layer 33 are electrically connected through the contact part. As shown in FIG. 4b, the contact part includes a contact part 331, a contact part 332 and a contact part 333. The first portion of the peripheral wiring includes peripheral wirings 341, 342 and 343; the second portion of the peripheral wiring includes a peripheral wiring 334. The contact part 331 in the second wiring layer 33 is electrically connected with the wiring 341 in the first wiring layer 34; the contact part 332 in the second wiring layer 33 is electrically connected with the wiring 342 in the first wiring layer 34; and the contact part 333 in the second wiring layer 33 is electrically connected with the wiring 343 in the first wiring layer 34. An electric signal from the flexible printed circuit board 4 is transmitted to the peripheral wiring 334 in the second wiring layer 33 through the welding part 32.

[0021] In Embodiment 1, because the welding part 32 of the peripheral wiring structure 3 of the organic electroluminescent device is arranged within the first wiring layer 34, a bezel width of the organic electroluminescent device occupied by the welding part 32 is further reduced, thus facilitating further reducing the bezel width of the organic electroluminescent device.

[0022] The organic electroluminescent device provided by Embodiment 1 of the present disclosure can be fabricated by the following method. Firstly, a buffer layer 2 made of an insulating material is formed on the base substrate 1; a peripheral wiring structure 3 and an organic electroluminescent structure 5 are formed on the buffer layer 2; then, a packaging structure 7 and the base substrate 1 are assembled and packaged; and then, a surface of the base substrate 1 away from the organic electroluminescent structure 5 is processed by using a laser process to form a concave part, and, the welding terminal 41 of the flexible printed circuit board 4 is welded onto the welding part 32 of the peripheral wiring structure 3.

[0023] In the organic electroluminescent device provided by Embodiment 1 of the present disclosure, the welding part 32 can be located in middle of the first wiring layer 34.

[0024] Inventive Embodiment 2 of the present disclosure provides an organic electroluminescent device, as shown in FIG. 5a to FIG. 5c. FIG. 5a is a structural schematic diagram of the organic electroluminescent device provided by Embodiment 2 of the present disclosure; FIG. 5b is a distribution schematic diagram of wirings in a second wiring layer of the organic electroluminescent device having the structure shown in FIG. 5a; and FIG. 5c is a distribution schematic diagram of wirings in a first wiring layer of the organic electroluminescent device having the structure shown in FIG. 5a. In the organic electroluminescent device provided by Embodiment 2 of the present disclosure, the base substrate 1, the packaging structure 7, the organic electroluminescent structure 5 located between the base substrate 1 and the packaging structure 7, and the flexible printed circuit board FPC 4 are arranged in a way similar to Example 1, and related description thereof is omitted herein. Hereinafter, differences between the organic electroluminescent device provided by Embodiment 2 and the organic electroluminescent device provided by Example 1 are described in detail.

[0025] As shown in FIG. 5a, in the organic electroluminescent device provided by Embodiment 2 of the present disclosure, the peripheral wiring structure 3 is arranged in two layers that is, a first wiring layer 35 and a second wiring layer 36, wherein, the first wiring layer 35 is located between the second wiring layer 36 and the base substrate 1;

[0026] As shown in FIG. 5c, the welding part 32 is formed within the first wiring layer 35. A contact part is provided in the second wiring layer 36, and the portion of the peripheral wiring structure in the first wiring layer 35 and the portion of the peripheral wiring structure in the second wiring layer 36 are electrically connected through the contact part. In the peripheral wiring structure 3, as shown in FIG. 5c, the diffusion circuit wiring is arranged in the first wiring layer 35, and at least a portion of the peripheral wiring is arranged in the first wiring layer 35; as shown in FIG. 5b, the contact part arranged in the second wiring layer 36 includes a contact part which is electrically connected with a first portion of the peripheral wiring arranged in the first wiring layer, and is electrically connected with an internal wiring of the organic electroluminescent structure.

[0027] For example, the diffusion circuit wiring, as

shown in FIG. 5c, includes a diffusion circuit wiring 3511, a diffusion circuit wiring 3512, a diffusion circuit wiring 3513, and a diffusion circuit wiring 3514. As shown in FIG. 5c, the first portion of the peripheral wiring arranged in the first wiring layer 35 includes a peripheral wiring 352, a peripheral wiring 353 and a peripheral wiring 354. As shown in FIG. 5b, the contact part arranged in the second wiring layer 36 includes a contact part 361, a contact part 362, a contact part 363 and a contact part 364. A second portion 3611 of the peripheral wiring is arranged in the second wiring layer 36. The welding part 32, for example, is provided with an integrated circuit 351.

[0028] The diffusion circuit wiring 3511 is electrically connected with the integrated circuit 351 provided for the welding part 32, and is electrically connected with the contact part 361; the contact part 361 is electrically connected with the peripheral wiring 3611 arranged in the second wiring layer 36, to realize electrically connecting with the internal wiring of the organic electroluminescent structure 5;

[0029] The diffusion circuit wiring 3512 is electrically connected with the integrated circuit 351 provided for the welding part 32, and is electrically connected with the peripheral wiring 352; the peripheral wiring 352 is electrically connected with the contact part 362 arranged in the second wiring layer 36, to realize electrical connection with the internal wiring of the organic electroluminescent structure 5;

[0030] The diffusion circuit wiring 3513 is electrically connected with the integrated circuit 351 provided for the welding part 32, and is electrically connected with the peripheral wiring 353; the peripheral wiring 353 is electrically connected with the contact part 363 arranged in the second wiring layer 36, to realize electrical connection with the internal wiring of the organic electroluminescent structure 5;

[0031] The diffusion circuit wiring 3514 is electrically connected with the integrated circuit 351 provided for the welding part 32, and is electrically connected with the peripheral wiring 354; the peripheral wiring 354 is electrically connected with the contact part 364 arranged in the second wiring layer 36, to realize electrical connection with the internal wiring of the organic electroluminescent structure 5.

[0032] In the organic electroluminescent device provided by the embodiment described above, the diffusion circuit wiring and at least a portion of the peripheral wiring are arranged in the first wiring layer 35, so that the diffusion circuit wiring and the peripheral wiring arranged on the first wiring layer 35 do not occupy an area surrounding the effective display region of the organic electroluminescent device, thus further reducing the width of corresponding bezel of the organic electroluminescent device.

[0033] For example, as shown in FIG. 5a, an insulating layer 9 is arranged between the first wiring layer 35 and the second wiring layer 36. The insulating layer 9 is provided with a via hole region corresponding to the contact part arranged in the second wiring layer 36. The portion of the peripheral wiring structure arranged in the first wiring layer 35 and corresponding to the contact part pass through the insulating layer 9 through the via hole region of the insulating layer to connect with the contact part.

[0034] In the organic electroluminescent device provided by Embodiment 2 of the present disclosure, the welding part 32 can be located in middle of the first wiring layer 35.

[0035] Inventive Embodiment 3 of the present disclosure provides an organic electroluminescent device, as shown in FIG. 6a to FIG. 6d. FIG. 6a is a structural schematic diagram of an organic electroluminescent device provided by Embodiment 3 of the present disclosure; FIG. 6b is a distribution schematic diagram of wirings in a fifth wiring layer of the organic electroluminescent device having the structure shown in FIG. 6a; FIG. 6c is a distribution schematic diagram of wirings in a fourth wiring layer of the organic electroluminescent device having the structure shown in FIG. 6a; and FIG. 6d is a distribution schematic diagram of wirings in a third wiring layer of the organic electroluminescent device having the structure shown in FIG. 6a. In the organic electroluminescent device provided by Embodiment 3 of the present disclosure, the base substrate 1, the packaging structure 7, the organic electroluminescent structure 5 located between the base substrate 1 and the packaging structure 7, and the flexible printed circuit board FPC 4 are arranged in a way similar to Example 1, and related description thereof is omitted herein. Hereinafter, differences between the organic electroluminescent device provided by Embodiment 3 and the organic electroluminescent device provided by Example 1 are described in detail.

[0036] In the organic electroluminescent device provided by this embodiment, the peripheral wiring structure 3 is arranged in three layers, that is, a third wiring layer 39, a fourth wiring layer 37 and a fifth wiring layer 38, which are sequentially arranged in a direction from the base substrate 1 to the organic electroluminescent structure 5, wherein,

[0037] As shown in FIG. 6d, the welding part 32 is arranged in the third wiring layer 39;

[0038] As shown in FIG. 6c, the diffusion circuit wiring and the peripheral wiring are arranged on the fourth wiring layer 37, and a contact part for electrically connecting with the third wiring layer 39 is further provided in the fourth wiring layer 37; as shown in FIG. 6c, in the fourth wiring layer 37, a diffusion circuit wiring 3711, a diffusion circuit wiring 3721, a diffusion circuit wiring 3731, a diffusion circuit wiring 3741, a peripheral wiring 371, a peripheral wiring 372, a peripheral wiring 373, a peripheral wiring 374, a contact part 375, a contact part 376 and a contact part 377 are provided, wherein, the contact part 375 is configured for connecting with the wiring 391 in the third wiring layer 39, the contact part 376 is configured for connecting with the wiring 392 in the third wiring layer 39, and the contact part 377 is configured for connecting with the wiring 393 in the third wiring layer 39;

[0039] As shown in FIG. 6b, in the fifth wiring layer 38, a contact part electrically connected with the peripheral wiring and the internal wiring of the organic electroluminescent structure 5 is provided; the contact part, as shown in FIG. 6b, includes a contact part 381, a contact part 382, a contact part 383 and a contact part 384.

[0040] In the organic electroluminescent device having the structure described as above, the diffusion circuit wiring, the peripheral wiring and the welding part in the peripheral wiring structure 3 are all arranged between the organic electroluminescent structure 5 and the base substrate 1. Therefore, the diffusion circuit wiring, the peripheral wiring and the welding part in the peripheral wiring structure 3 do not occupy an area surrounding the effective display region, thus further reducing the width of the bezel of the organic electroluminescent device.

[0041] For example, as shown in FIG. 6a, in the peripheral wiring structure 3 of the organic electroluminescent device provided by Embodiment 3:

An insulating layer 10 is arranged between the third wiring layer 39 and the fourth wiring layer 37. The portion of the peripheral wiring structure arranged in the third wiring layer 39 and corresponding to the contact part arranged in the fourth wiring layer 37 pass through the insulating layer 10 to electrically connect with the contact part arranged in the fourth wiring layer 37;

An insulating layer 11 is arranged between the fourth wiring layer 37 and the fifth wiring layer 38. The portion of the peripheral wiring structure arranged In the fourth wiring layer 37 corresponding to the contact part arranged in the fifth wiring layer 38 pass through the insulating layer 11 to electrically connect with the contact part arranged in the fifth wiring layer 38.

[0042] In the organic electroluminescent device provided by Embodiment 3 of the present disclosure, the welding part 32 can be located in middle of the third wiring layer 39.

[0043] An embodiment of the present disclosure further provides a display device. The display device comprises the organic electroluminescent device provided by any one of the embodiments described above.

[0044] Another embodiment of the present disclosure further provides a manufacturing method of the organic electroluminescent device provided by any one of the embodiments described above, comprising:

[0045] forming a peripheral wiring structure and an organic electroluminescent structure on a base substrate; packaging and assembling a packaging structure and the base substrate, wherein the peripheral wiring structure has a welding part;

[0046] forming a concave part which is opened on a surface of the base substrate away from the organic electroluminescent structure to expose the welding part;

[0047] inserting a welding terminal of a flexible printed circuit board into the concave part, and welding the welding terminal of the flexible printed circuit board onto the welding part.

[0048] In an example, before the forming the peripheral wiring structure and the organic electroluminescent structure on the base substrate, and packaging and assembling the packaging structure and the base substrate, the method further comprises:

coating a PI liquid on a glass substrate;
baking the glass substrate coated with the PI liquid to form a base substrate.

[0049] Before the forming the concave part which is opened on the surface of the base substrate away from the organic electroluminescent structure to expose the welding part, the method further comprises:

[0050] the structure obtained by forming the peripheral wiring structure and the organic electroluminescent structure on the base substrate, and packaging and assembling the packaging structure and the base substrate, is separated from the glass substrate.

[0051] According to above description, the embodiments of the present disclosure at least can provide structures and methods as defined in the appended claims.

Claims

1. An organic electroluminescent device, comprising a base substrate (1), a packaging structure (7), an organic electroluminescent structure (5) located between the base substrate (1) and the packaging structure (7), and a flexible printed circuit board (4); the base substrate (1) being provided with a peripheral wiring structure (3) electrically connected with an internal wiring of the organic electroluminescent structure (5); the peripheral wiring structure (3) including a welding part (32), wherein the welding part (32) has a first surface facing the base substrate (1), at least a portion of the first surface being exposed to electrically connect with a welding terminal (41) of the flexible printed circuit board (4), **characterized by** one of the following two alternatives:

according to a first alternative: the peripheral wiring structure (3) further includes a peripheral wiring (334, 341, 342, 343; 3611, 352, 353, 354) electrically connected with the internal wiring of the organic electroluminescent structure (5), and a diffusion circuit wiring (3511, 3512, 3513, 3514) for connecting the welding part (32) and the peripheral wiring (334, 341, 342, 343; 3611, 352, 353, 354); the peripheral wiring structure (3) is divided into a first wiring layer (34; 35) and a second wiring layer (33; 36), the first wiring layer (34; 35) is located between the second wiring layer (33; 36) and the base substrate (1);

and the welding part (32) is arranged in the first wiring layer (34; 35), the diffusion circuit wiring (3511, 3512, 3513, 3514) and at least a portion of the peripheral wiring are arranged in the first wiring layer (34; 35), a contact part (331, 332, 333; 361, 362, 363, 364) is arranged in the second wiring layer (33; 36), the peripheral wiring structure (3) arranged in the first wiring layer (34; 35) and the peripheral wiring structure (3) arranged in the second wiring layer (33; 36) are electrically connected through the contact part (331, 332, 333; 361, 362, 363, 364);

or,

according to a second alternative: the peripheral wiring structure (3) further includes a peripheral wiring electrically connected with the internal wiring of the organic electroluminescent structure (5), and a diffusion circuit wiring for connecting the welding part (32) and the peripheral wiring, the peripheral wiring structure (3) is divided into a third wiring layer (39), a fourth wiring layer (37) and a fifth wiring layer (38), which are sequentially arranged in a direction from the base substrate (1) to the organic electroluminescent structure (5), wherein,

the welding part (32) is arranged in the third wiring layer (39);

the diffusion circuit wiring (3711, 3721, 3731, 3741) and the peripheral wiring (371, 372, 373, 374) are arranged in the fourth wiring layer (37), and the fourth wiring layer (37) is provided with a contact part (375, 376, 377) electrically connected with the third wiring layer (39);

the fifth wiring layer (38) is provided with a contact part (381, 382, 383, 384) which is electrically connected with the peripheral wiring (371, 372, 373, 374) and the internal wiring of the organic electroluminescent structure (5).

2. The organic electroluminescent device according to claim 1 including the first alternative, wherein, the base substrate (1) is provided with a concave part configured to expose the at least a portion of the first surface of the welding part (32).

3. The organic electroluminescent device according to claim 1 including the first alternative, the contact part (331, 332, 333; 361, 362, 363, 364) arranged in the second wiring layer (33; 36) includes a contact part (331, 332, 333; 361, 362, 363, 364) which is electrically connected with at least a portion of the peripheral wiring arranged in the first wiring layer (34; 35) and the internal wiring of the organic electroluminescent structure (5).

4. The organic electroluminescent device according to claim 1 including the first alternative or according to claim 2 or 3, wherein, an insulating layer (8) is arranged between the first wiring layer (34; 35) and the second wiring layer (33; 36), the insulating layer (8) is provided with a via hole region corresponding to the contact part (331, 332, 333; 361, 362, 363, 364) in the second wiring layer, a portion (341, 342, 343; 352, 353, 354) of the peripheral wiring structure (3) arranged in the first wiring layer (34; 35) and corresponding to the contact part (331, 332, 333; 361, 362, 363, 364) passes through the insulating layer (8) through the via hole region so as to be electrically connected with the contact part (331, 332, 333; 361, 362, 363, 364).

5. The organic electroluminescent device according to claim 1 including the first alternative or according to any one of claims 2 to 4, wherein, the welding part (32) is located in middle of the first wiring layer (34; 35).

6. The organic electroluminescent device according to claim 1 including the second alternative, wherein, an insulating layer (10) is arranged between the third wiring layer (39) and the fourth wiring layer (37), a portion of the peripheral wiring structure (3) arranged in the third wiring layer (39) and corresponding to the contact part (375, 376, 377) in the fourth wiring layer (37) passes the insulating layer (10) so as to be electrically connected with the contact part (375, 376, 377) arranged in the fourth wiring layer (37); an insulating layer (11) is arranged between the fourth wiring layer (37) and the fifth wiring layer (38), a portion of the peripheral wiring structure (3) arranged in the fourth wiring layer (37) and corresponding to the contact part (381, 382, 383, 384) in the fifth wiring layer (38) passes the insulating layer (11) so as to be electrically connected with the contact part (381, 382, 383, 384) arranged in the fifth wiring layer (38).

7. The organic electroluminescent device according to claim 1 including the second alternative or according to claim 6, wherein, the welding part (32) is located in middle of the third wiring layer (39).

8. The organic electroluminescent device according to any one of claims 1 to 7, wherein, the base substrate (1) is a flexible base substrate (1) and the packaging structure (7) is a flexible packaging structure (7).

9. A display device, comprising the organic electroluminescent device according to any one of claims 1 to 8.

10. A manufacturing method of the organic electroluminescent device according to any one of claims 1 to 8, comprising:

forming a peripheral wiring structure (3) and an organic electroluminescent structure (5) on a

base substrate (1), packaging and assembling a packaging structure (7) and the base substrate (1), wherein the peripheral wiring structure (3) has a welding part (32);
forming a concave part which is opened on a surface of the base substrate (1) away from the organic electroluminescent structure (5) to expose the welding part (32);
inserting a welding terminal (41) of a flexible printed circuit board (4) into the concave part, and welding the welding terminal (41) of the flexible printed circuit board (4) onto the welding part (32).

11. The manufacturing method according to claim 10, wherein,
before forming the peripheral wiring structure (3) and an organic electroluminescent structure (5) on a base substrate (1), packaging and assembling a packaging structure (7) and the base substrate (1), wherein the peripheral wiring structure (3) has a welding part (32), the method further comprises:

coating a PI liquid on a glass substrate;
baking the glass substrate coated with the PI liquid to form a base substrate (1).

12. The manufacturing method according to claim 10 or 11, wherein,
before forming the concave part which is opened on a surface of the base substrate (1) away from the organic electroluminescent structure (5) to expose the welding part (32), the method further comprises:
separating a structure from the glass substrate, the structure is obtained by forming the peripheral wiring structure (3) and the organic electroluminescent structure (5) on the base substrate (1), and packaging and assembling the packaging structure (7) and the base substrate (1).

Patentansprüche

1. Organische Elektrolumineszenz-Vorrichtung mit einem Basissubstrat (1), einer Packungsstruktur (7), einer organischen Elektrolumineszenz-Struktur (5), die sich zwischen dem Basissubstrat (1) und der Packungsstruktur (7) befindet, und einer flexiblen Leiterplatte (4); wobei das Basissubstrat (1) mit einer Peripher-Verdrahtungsstruktur (3) versehen ist, die elektrisch mit einer Innen-Verdrahtung der organischen Elektrolumineszenz-Struktur (5) verbunden ist; wobei die Peripher-Verdrahtungsstruktur (3) einen Verschweißungsteil (32) aufweist, wobei der Verschweißungsteil (32) eine erste Oberfläche, die auf das Basissubstrat (1) gerichtet ist, aufweist, wobei wenigstens ein Teil der ersten Oberfläche freiliegt, um elektrisch mit einem Verschweißungsanschluss (41) der flexiblen Leiterplatte (4) zu verbinden, **gekennzeichnet durch** eine der folgenden zwei Alternativen:

gemäß einer ersten Alternative: die Peripher-Verdrahtungsstruktur (3) weiter eine Peripher-Verdrahtung (334, 341, 342, 343; 3611, 352, 353, 354) aufweist, die elektrisch mit der Innen-Verdrahtung der organischen Elektrolumineszenz-Struktur (5) verbunden ist und eine Streuschaltungsverdrahtung (3511, 3512, 3513, 3514) zum Verbinden des Verschweißungsteils (32) und der Peripher-Verdrahtung (334, 341, 342, 343; 3611, 352, 353, 354); wobei die Peripher-Verdrahtungsstruktur (3) unterteilt ist in eine erste Verdrahtungsschicht (34; 35) und eine zweite Verdrahtungsschicht (33; 36), wobei die erste Verdrahtungsschicht (34; 35) sich zwischen der zweiten Verdrahtungsschicht (33; 36) und dem Basissubstrat (1) befindet; und wobei der Verschweißungsteil (32) in der der ersten Verdrahtungsschicht (34; 35) angeordnet ist, wobei die Streuschaltungsverdrahtung (3511, 3512, 3513, 3514) und wenigstens ein Teil der Peripher-Verdrahtung in der ersten Verdrahtungsschicht (34; 35) angeordnet sind, ein Kontaktteil (331, 332, 333; 361, 362, 363, 364) in der zweiten Verdrahtungsschicht (33; 36) angeordnet ist, wobei die Peripher-Verdrahtungsstruktur (3), die in der ersten Verdrahtungsschicht (34; 35) angeordnet ist, und die Peripher-Verdrahtungsstruktur (3), die in der zweiten Verdrahtungsschicht (33; 36) angeordnet ist, elektrisch durch den Kontaktteil (331, 332, 333; 361, 362, 363, 364) verbunden sind;
oder,
gemäß einer zweiten Alternative: die Peripher-Verdrahtungsstruktur (3) weiter aufweist eine Peripher-Verdrahtung, die elektrisch mit der Innen-Verdrahtung der organischen Elektrolumineszenz-Struktur (5) verbunden ist, und eine Streuschaltungsverdrahtung zum Verbinden des Verschweißungsteils (32) und der Peripher-Verdrahtung, wobei die Peripher-Verdrahtungsstruktur (3) unterteilt ist in eine dritte Verdrahtungsschicht (39), eine vierte Verdrahtungsschicht (37) und eine fünfte Verdrahtungsschicht (38), die sequenziell in einer Richtung vom Basissubstrat (1) zur organischen Elektrolumineszenz-Struktur (5) angeordnet sind, wobei,
der Verschweißungsteil (32) in der dritten Verdrahtungsschicht (39) angeordnet ist;
die Streuschaltungsverdrahtung (3711, 3721, 3731, 3741) und die Peripher-Verdrahtung (371, 372, 373, 374) in der vierten Verdrahtungsschicht (37) angeordnet sind und die vierte Verdrahtungsschicht (37) mit einem Kontaktteil

(375, 376, 377) versehen ist, der elektrisch mit der dritten Verdrahtungsschicht (39) verbunden ist;
die fünfte Verdrahtungsschicht (38) mit einem Kontaktteil (381, 382, 383, 384) versehen ist, der elektrisch mit der Peripher-Verdrahtung (371, 372, 373, 374) und der Innen-Verdrahtung der organischen Elektrolumineszenz-Struktur (5) verbunden ist.

2. Organische Elektrolumineszenz-Vorrichtung gemäß Anspruch 1 mit der ersten Alternative, wobei das Basissubstrat (1) mit einem konkaven Teil versehen ist, der konfiguriert ist, das der wenigstens eine Teil der Oberfläche des Verschweißungsteils (32) freiliegt.

3. Organische Elektrolumineszenz-Vorrichtung gemäß Anspruch 1 mit der ersten Alternative, wobei der Kontaktteil (331, 332, 333; 361, 362, 363, 364), der in der zweiten Verdrahtungsschicht (33; 36) angeordnet ist, aufweist einen Kontaktteil (331, 332, 333; 361, 362, 363, 364), der elektrisch mit wenigstens einem Teil der Peripher-Verdrahtung, die in der ersten Verdrahtungsschicht (34; 35) angeordnet ist, und der Innen-Verdrahtung der organischen Elektrolumineszenz-Struktur (5) verbunden ist.

4. Organische Elektrolumineszenz-Vorrichtung gemäß Anspruch 1 mit der ersten Alternative oder gemäß Anspruch 2 oder 3, wobei eine Isolierschicht (8) zwischen der ersten Verdrahtungsschicht (34; 35) und der zweiten Verdrahtungsschicht (33; 36) angeordnet ist, wobei die Isolierschicht (8) versehen ist mit einer Via-Lochregion, die zum Kontaktteil (331, 332, 333; 361, 362, 363, 364) in der zweiten Verdrahtungsschicht korrespondiert, wobei ein Teil (341, 342, 343; 352, 353, 354) der Peripher-Verdrahtungsstruktur (3), die in der ersten Verdrahtungsschicht (34; 35) angeordnet ist und zum Kontaktteil (331, 332, 333; 361, 362, 363, 364)korrespondiert, durch die Isolierschicht (8) durch die Via-Lochregion so hindurchgeht, um elektrisch mit dem Kontaktteil (331, 332, 333; 361, 362, 363, 364) verbunden zu werden.

5. Organische Elektrolumineszenz-Vorrichtung gemäß Anspruch 1 mit der ersten Alternative oder gemäß einem der Ansprüche 2 bis 4, wobei der Verschweißungsteil (32) sich in der Mitte der ersten Verdrahtungsschicht (34; 35) befindet.

6. Organische Elektrolumineszenz-Vorrichtung gemäß Anspruch 1 mit der zweiten Alternative, wobei eine Isolierschicht (10) zwischen der dritten Verdrahtungsschicht (39) und der vierten Verdrahtungsschicht (37) angeordnet ist, wobei ein Teil der Peripher-Verdrahtungsstruktur (3), der in der dritten Verdrahtungsschicht (39) angeordnet ist und zum Kontaktteil (375, 376, 377) korrespondiert, in der vierten Verdrahtungsschicht (37) die Isolierschicht (10) passiert, um so mit dem Kontaktteil (375, 376, 377), der in der vierten Verdrahtungsschicht (37) angeordnet ist, elektrisch verbunden zu werden;
eine Isolierschicht (11) zwischen der vierten Verdrahtungsschicht (37) und der fünften Verdrahtungsschicht (38) angeordnet ist, wobei ein Teil der Peripher-Verdrahtungsstruktur (3) in der vierten Verdrahtungsschicht (37) angeordnet ist und zum Kontaktteil (381, 382, 383, 384) korrespondiert, in der fünften Verdrahtungsschicht (38) die Isolierschicht (11) passiert, um so elektrisch mit dem Kontaktteil (381, 382, 383, 384), der in der fünften Verdrahtungsschicht (38) angeordnet ist, verbunden zu werden.

7. Organische Elektrolumineszenz-Vorrichtung gemäß Anspruch 1 mit der zweiten Alternative oder gemäß Anspruch 6, wobei der Verschweißungsteil (32) sich in der Mitte der dritten Verdrahtungsstruktur (39) befindet.

8. Organische Elektrolumineszenz-Vorrichtung gemäß einem der Ansprüche 1 bis 7, wobei das Basissubstrat (1) ein flexibles Basissubstrat (1) ist und die Packungsstruktur (7) eine flexible Packungsstruktur (7) ist.

9. Anzeigevorrichtung mit der organischen Elektrolumineszenz-Vorrichtung gemäß einem der Ansprüche 1 bis 8.

10. Herstellungsverfahren für die organische Elektrolumineszenz-Vorrichtung gemäß einem der Ansprüche 1 bis 8 mit:

Bilden einer Peripher-Verdrahtungsstruktur (3) und einer organischen Elektrolumineszenz-Struktur (5) auf einem Basissubstrat (1), Packen und Zusammenbauen einer Packungsstruktur (7) und des Basissubstrats (1), wobei die Peripher-Verdrahtungsstruktur (3) einen Verschweißungsteil (32) aufweist;
Bilden eines konkaven Teils, der auf einer Oberfläche des Basissubstrats (1) weg von der organischen Elektrolumineszenz-Struktur (5) geöffnet ist, um den Verschweißungsteil (32) freizulegen;
Einsetzen eines Verschweißungsanschlusses (41) einer flexiblen Schaltungsplatte (4) in den konkaven Teil und Schweißen des Verschweißungsanschlusses (41) der flexiblen Leiterplatte (4) auf den Verschweißungsteil (32).

11. Herstellungsverfahren gemäß Anspruch 10, wobei, vor Bilden der Peripher-Verdrahtungsstruktur (3)

und einer organischen Elektrolumineszenz-Struktur (5) auf dem Basissubstrat (1) Packen und Zusammenbauen einer Packungsstruktur (7) und des Basissubstrats (1), wobei die Peripher-Verdrahtungsstruktur (3) einen Verschweißungsteil (32) aufweist, das Verfahren weiter aufweist:

Beschichten einer PI-Flüssigkeit auf einem Glassubstrat;
Backen des Glassubstrats, das mit der PI-Flüssigkeit beschichtet ist, um ein Basissubstrat (1) zu bilden.

12. Herstellungsverfahren gemäß Anspruch 10 oder 11, wobei
vor Bilden des konkaven Teils, der auf einer Oberfläche des Basissubstrats (1) weg von der organischen Elektrolumineszenz-Struktur (5) geöffnet ist, um den Verschweißungsteil (32) freizulegen, das Verfahren weiter aufweist:
Abtrennen einer Struktur von dem Glassubstrat, wobei die Struktur erhalten wird durch Bilden der Peripher-Verdrahtungsstruktur (3) und der organischen Elektrolumineszenz-Struktur (5) auf dem Basissubstrat (1) und Packen und Zusammenbauen der Packungsstruktur (7) und des Basissubstrats (1).

Revendications

1. Dispositif électroluminescent organique, comprenant un substrat de base (1), une structure de mise sous module (7), une structure électroluminescente organique (5) qui est localisée entre le substrat de base (1) et la structure de mise sous module (7), et une carte de circuit imprimé flexible (4) ; le substrat de base (1) étant muni d'une structure de câblage périphérique (3) qui est connectée électriquement avec un câblage interne de la structure électroluminescente organique (5) ; la structure de câblage périphérique (3) incluant une partie de soudage (32), dans lequel la partie de soudage (32) comporte une première surface qui fait face au substrat de base (1), au moins une section de la première surface étant exposée de manière à ce qu'elle soit connectée électriquement avec une borne de soudage (41) de la carte de circuit imprimé flexible (4), **caractérisé par** l'une des deux branches d'alternative qui suivent :

selon une première branche d'alternative : la structure de câblage périphérique (3) inclut en outre un câblage périphérique (334, 341, 342, 343 ; 3611, 352, 353, 354) qui est connecté électriquement avec le câblage interne de la structure électroluminescente organique (5), et un câblage de circuit de diffusion (3511, 3512, 3513, 3514) pour connecter la partie de soudage (32) et le câblage périphérique (334, 341, 342, 343 ; 3611, 352, 353, 354) ; la structure de câblage périphérique (3) est divisée selon une première couche de câblage (34 ; 35) et une deuxième couche de câblage (33 ; 36), la première couche de câblage (34 ; 35) est localisée entre la deuxième couche de câblage (33 ; 36) et le substrat de base (1) ; et la partie de soudage (32) est agencée dans la première couche de câblage (34 ; 35) ; le câblage de circuit de diffusion (3511, 3512, 3513, 3514) et au moins une section du câblage périphérique sont agencés dans la première couche de câblage (34 ; 35), une partie de contact (331, 332, 333 ; 361, 362, 363, 364) est agencée dans la deuxième couche de câblage (33 ; 36), la structure de câblage périphérique (3) qui est agencée dans la première couche de câblage (34 ; 35) et la structure de câblage périphérique (3) qui est agencée dans la deuxième couche de câblage (33 ; 36) sont connectées électriquement par l'intermédiaire de la partie de contact (331, 332, 333 ; 361, 362, 363, 364) ; ou
selon une seconde branche d'alternative : la structure de câblage périphérique (3) inclut en outre un câblage périphérique qui est connecté électriquement avec le câblage interne de la structure électroluminescente organique (5), et un câblage de circuit de diffusion pour connecter la partie de soudage (32) et le câblage périphérique, la structure de câblage périphérique (3) est divisée selon une troisième couche de câblage (39), une quatrième couche de câblage (37) et une cinquième couche de câblage (38), lesquelles sont agencées de façon séquentielle dans une direction depuis le substrat de base (1) jusqu'à la structure électroluminescente organique (5) ; dans lequel :
la partie de soudage (32) est agencée dans la troisième couche de câblage (39) ;
le câblage de circuit de diffusion (3711, 3721, 3731, 3741) et le câblage périphérique (371, 372, 373, 374) sont agencés dans la quatrième couche de câblage (37), et la quatrième couche de câblage (37) est munie d'une partie de contact (375, 376, 377) qui est connectée électriquement avec la troisième couche de câblage (39) ; et
la cinquième couche de câblage (38) est munie d'une partie de contact (381, 382, 383, 384) qui est connectée électriquement avec le câblage périphérique (371, 372, 373, 374) et le câblage interne de la structure électroluminescente organique (5).

2. Dispositif électroluminescent organique selon la revendication 1 incluant la première branche d'alternative, dans lequel le substrat de base (1) est muni

d'une partie concave qui est configurée de manière à ce qu'elle expose l'au moins une section de la première surface de la partie de soudage (32).

3. Dispositif électroluminescent organique selon la revendication 1 incluant la première branche d'alternative, dans lequel la partie de contact (331, 332, 333 ; 361, 362, 363, 364) qui est agencée dans la deuxième couche de câblage (33 ; 36) inclut une partie de contact (331, 332, 333 ; 361, 362, 363, 364) qui est connectée électriquement avec au moins une section du câblage périphérique qui est agencée dans la première couche de câblage (34 ; 35) et le câblage interne de la structure électroluminescente organique (5).

4. Dispositif électroluminescent organique selon la revendication 1 incluant la première branche d'alternative selon la revendication 2 ou 3, dans lequel une couche isolante (8) est agencée entre la première couche de câblage (34 ; 35) et la deuxième couche de câblage (33 ; 36), la couche isolante (8) est munie d'une région de trou de via qui correspond à la partie de contact (331, 332, 333 ; 361, 362, 363, 364) dans la deuxième couche de câblage, une section (341, 342, 343 ; 352, 353, 354) de la structure de câblage périphérique (3) qui est agencée dans la première couche de câblage (34 ; 35) et qui correspond à la partie de contact (331, 332, 333 ; 361, 362, 363, 364) passe au travers de la couche isolante (8) au travers de la région de trou de via de telle sorte qu'elle soit connectée électriquement avec la partie de contact (331, 332, 333 ; 361, 362, 363, 364).

5. Dispositif électroluminescent organique selon la revendication 1 incluant la première branche d'alternative selon l'une quelconque des revendications 2 à 4, dans lequel la partie de soudage (32) est localisée en une position intermédiaire de la première couche de câblage (34 ; 35).

6. Dispositif électroluminescent organique selon la revendication 1 incluant la seconde branche d'alternative, dans lequel :

une couche isolante (10) est agencée entre la troisième couche de câblage (39) et la quatrième couche de câblage (37), une section de la structure de câblage périphérique (3) qui est agencée dans la troisième couche de câblage (39) et qui correspond à la partie de contact (375, 376, 377) dans la quatrième couche de câblage (37) passe au travers de la couche isolante (10) de telle sorte qu'elle soit connectée électriquement avec la partie de contact (375, 376, 377) qui est agencée dans la quatrième couche de câblage (37) ; et
une couche isolante (11) est agencée entre la quatrième couche de câblage (37) et la cinquième couche de câblage (38), une section de la structure de câblage périphérique (3) qui est agencée dans la quatrième couche de câblage (37) et qui correspond à la partie de contact (381, 382, 383, 384) dans la cinquième couche de câblage (38) passe au travers de la couche isolante (11) de telle sorte qu'elle soit connectée électriquement avec la partie de contact (381, 382, 383, 384) qui est agencée dans la cinquième couche de câblage (38).

7. Dispositif électroluminescent organique selon la revendication 1 incluant la seconde branche d'alternative selon la revendication 6, dans lequel la partie de soudage (32) est localisée en une position intermédiaire de la troisième couche de câblage (39).

8. Dispositif électroluminescent organique selon l'une quelconque des revendications 1 à 7, dans lequel le substrat de base (1) est un substrat de base flexible (1) et la structure de mise sous module (7) est une structure de mise sous module flexible (7).

9. Dispositif d'affichage, comprenant le dispositif électroluminescent organique selon l'une quelconque des revendications 1 à 8.

10. Procédé de fabrication du dispositif électroluminescent organique selon l'une quelconque des revendications 1 à 8, comprenant :

la formation d'une structure de câblage périphérique (3) et d'une structure électroluminescente organique (5) sur un substrat de base (1), la mise sous module et l'assemblage d'une structure de mise sous module (7) et du substrat de base (1), dans lequel la structure de câblage périphérique (3) comporte une partie de soudage (32) ;
la formation d'une partie concave qui est ouverte sur une surface du substrat de base (1) à distance de la structure électroluminescente organique (5) de manière à ce qu'elle expose la partie de soudage (32) ; et
l'insertion d'une borne de soudage (41) d'une carte de circuit imprimé flexible (4) à l'intérieur de la partie concave et le soudage de la borne de soudage (41) de la carte de circuit imprimé flexible (4) sur la partie de soudage (32).

11. Procédé de fabrication selon la revendication 10, dans lequel :
avant la formation d'une structure de câblage périphérique (3) et d'une structure électroluminescente organique (5) sur un substrat de base (1), la mise sous module et l'assemblage d'une structure de mise sous module (7) et du substrat de base (1), dans lequel la structure de câblage périphérique (3) com-

porte une partie de soudage (32), le procédé comprend en outre :

le dépôt par revêtement d'un liquide PI sur un substrat en verre ; et
la cuisson du substrat en verre revêtu du liquide PI de manière à former un substrat de base (1).

12. Procédé de fabrication selon la revendication 10 ou 11, dans lequel :
avant la formation de la partie concave qui est ouverte sur une surface du substrat de base (1) à distance de la structure électroluminescente organique (5) de manière à ce qu'elle expose la partie de soudage (32), le procédé comprend en outre :
la séparation d'une structure vis-à-vis du substrat en verre, la structure est obtenue en formant la structure de câblage périphérique (3) et la structure électroluminescente organique (5) sur le substrat de base (1), et la mise sous module et l'assemblage de la structure de mise sous module (7) et du substrat de base (1).

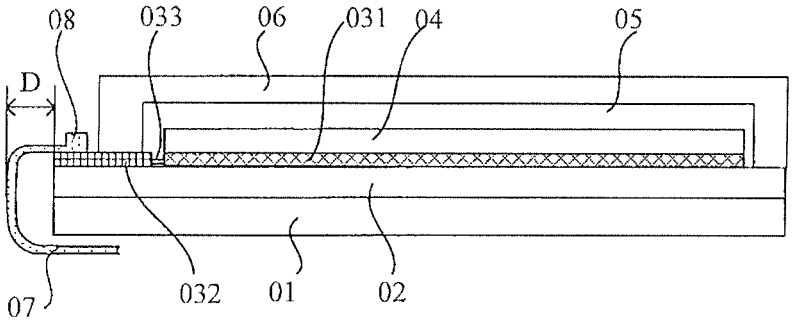

FIG. 1

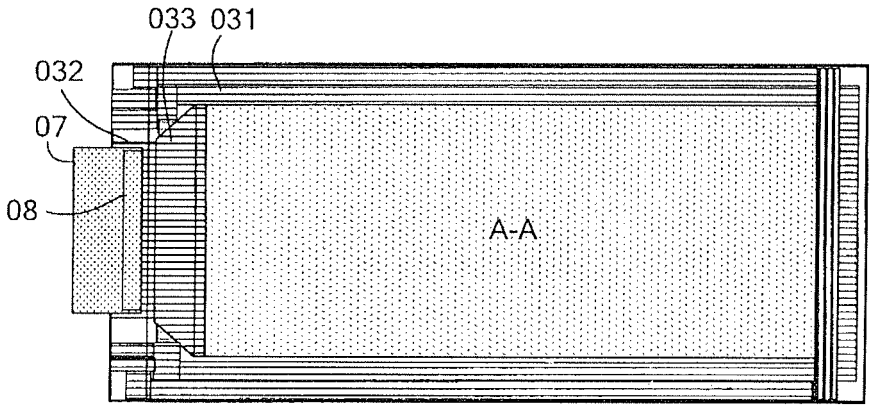

FIG. 2

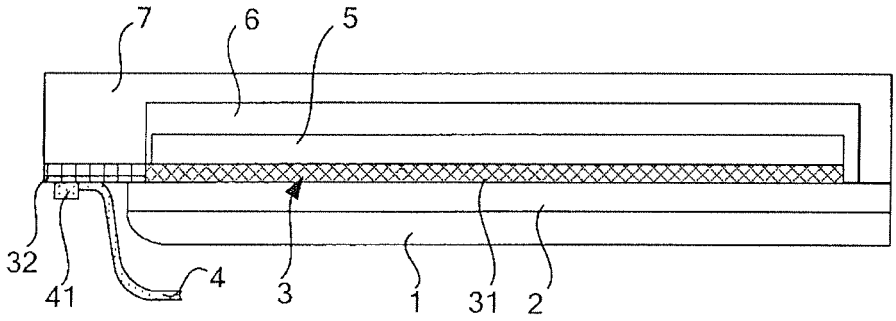

FIG. 3

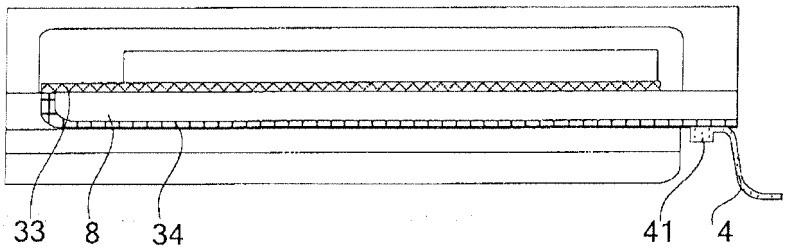

FIG. 4a

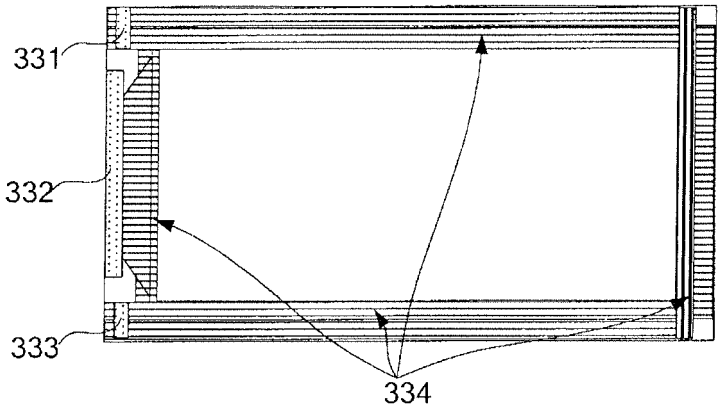

FIG. 4b

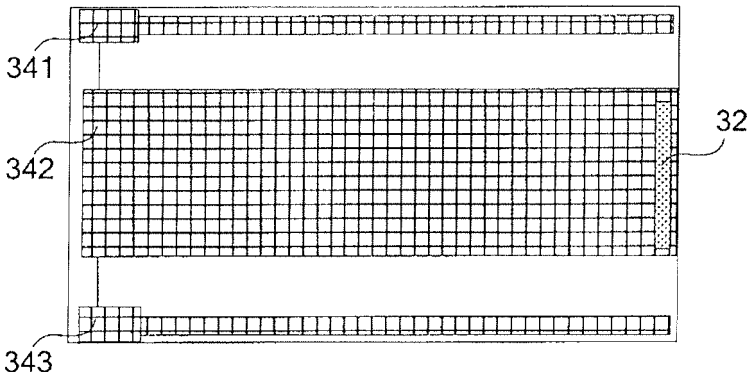

FIG. 4c

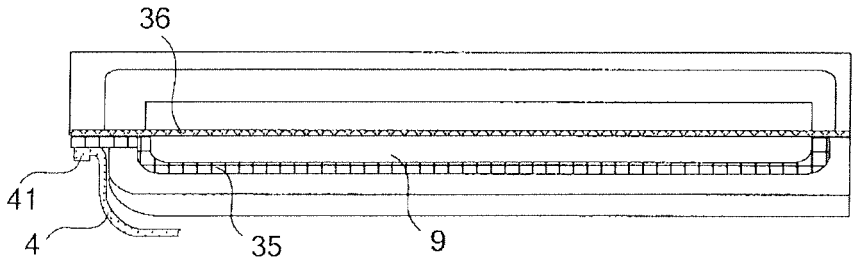

FIG. 5a

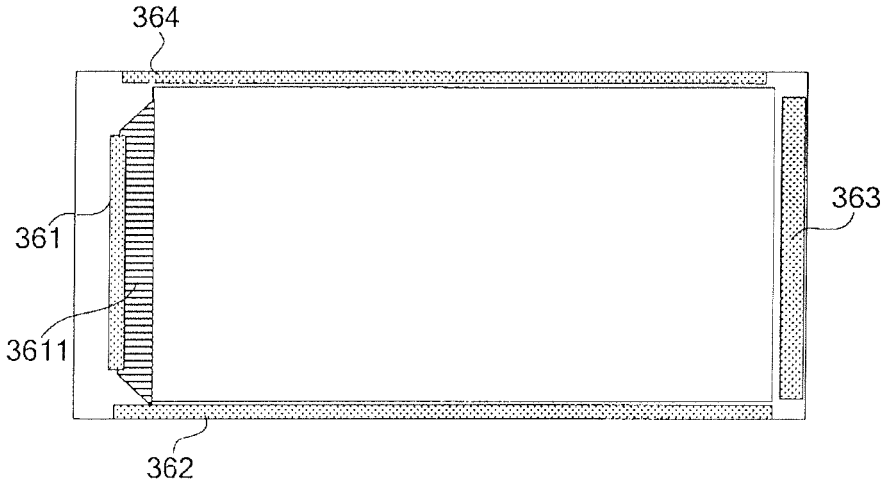

FIG. 5b

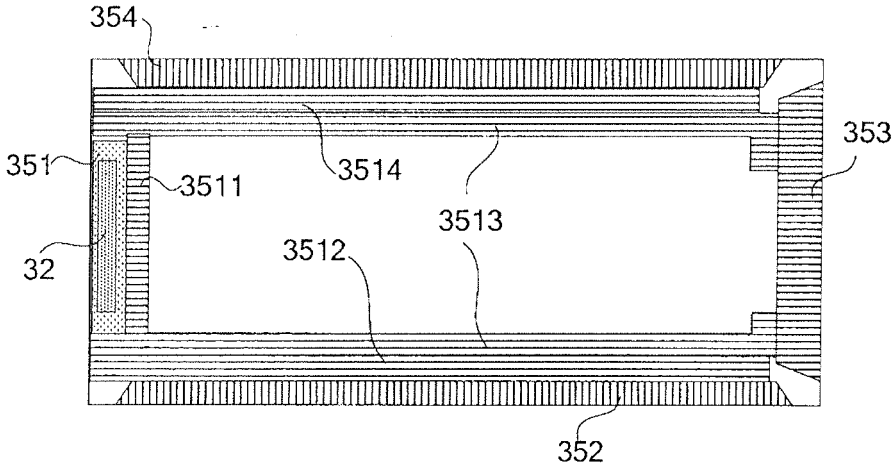

FIG. 5c

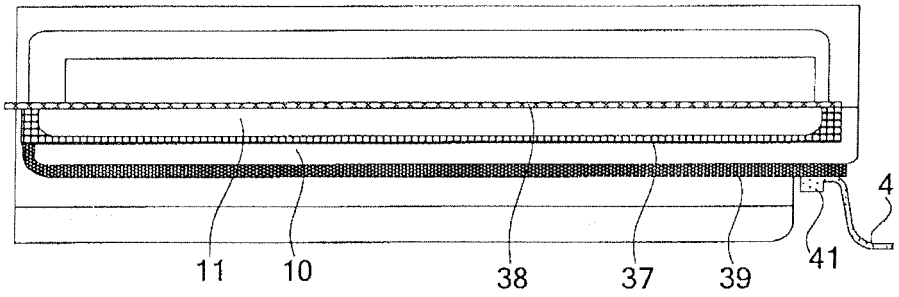

FIG. 6a

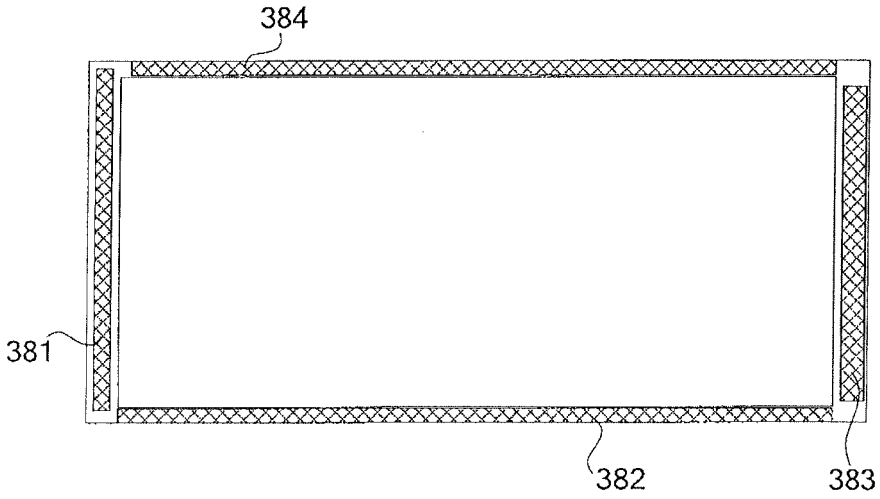

FIG. 6b

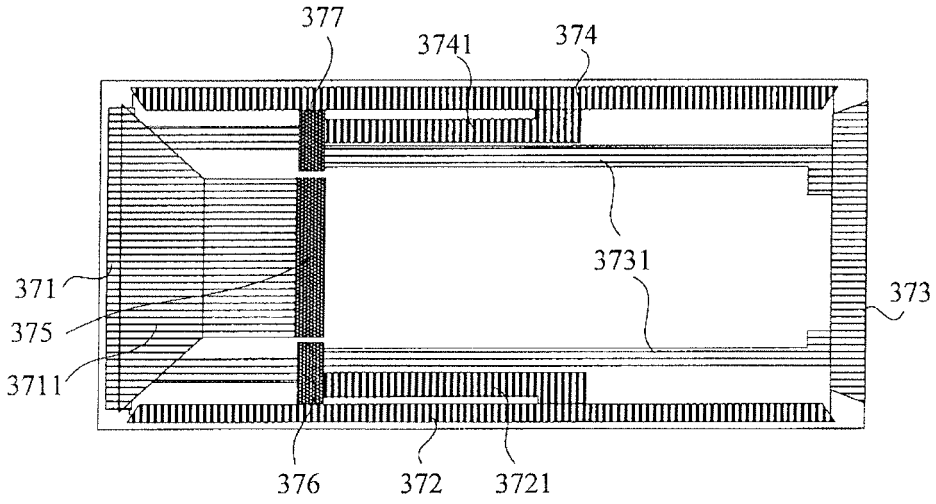

FIG. 6c

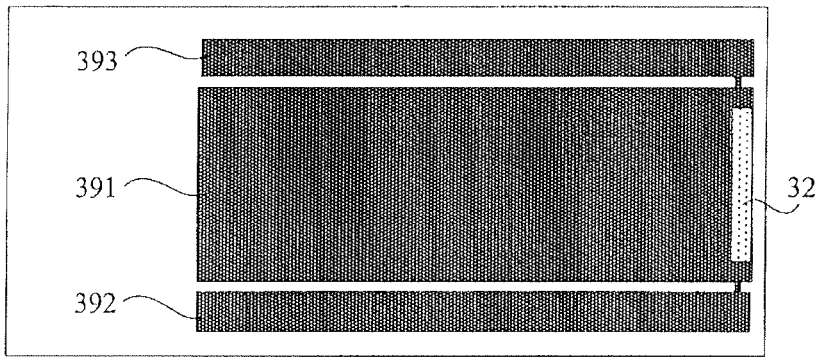

FIG. 6d

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 2010148209 A1 **[0006]**
- US 2014319496 A1 **[0007]**
- US 2014063393 A1 **[0008]**

专利名称(译)	有机电致发光装置及其制造方法和显示装置		
公开(公告)号	EP3226321B1	公开(公告)日	2019-10-02
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[标]申请(专利权)人(译)	京东方科技集团股份有限公司		
申请(专利权)人(译)	京东方科技集团股份有限公司.		
当前申请(专利权)人(译)	京东方科技集团股份有限公司.		
[标]发明人	FUJINO SEIJI HUANG GUODONG ZENG QINGHUI		
发明人	FUJINO, SEIJI HUANG, GUODONG ZENG, QINGHUI		
IPC分类号	H01L27/32 H01L51/52		
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优先权	201410708765.0 2014-11-27 CN		
其他公开文献	EP3226321A4 EP3226321A1		
外部链接	Espacenet		

摘要(译)

有机电致发光装置及其制造方法和显示装置。该有机电致发光器件包括：基底基板（1），封装结构（7），位于基底基板（1）和封装结构（7）之间的有机电致发光结构（5）以及柔性印刷电路板（ 4）;基底基板（1）具有与有机电致发光结构（5）的内部布线电连接的外围布线结构（3）。外围布线结构（3）包括焊接部分（32）。焊接部分（32）具有面对基底基板（1）的第一表面，第一表面的至少一部分被暴露以与柔性印刷电路板（4）的焊接端子电连接。

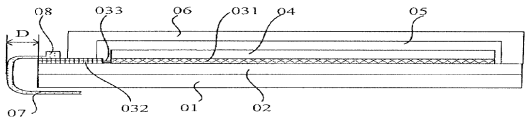

FIG. 1

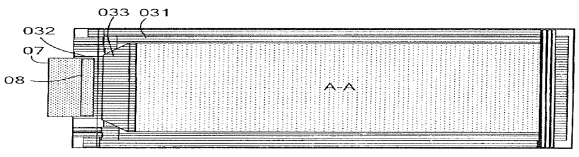

FIG. 2

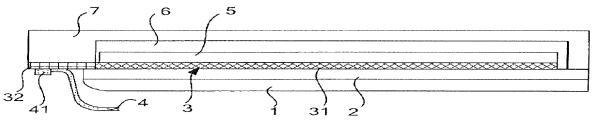

FIG. 3