(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 598 869 A3

# (12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
**15.11.2006 Bulletin 2006/46**

(43) Date of publication A2:
**23.11.2005 Bulletin 2005/47**

(21) Application number: **05010627.7**

(22) Date of filing: **17.05.2005**

(51) Int Cl.:
***H01L 27/00*** *(2006.01)*

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
**AL BA HR LV MK YU**

(30) Priority: **21.05.2004 KR 2004036363**

(71) Applicant: **LG ELECTRONICS INC.**
**Seoul (KR)**

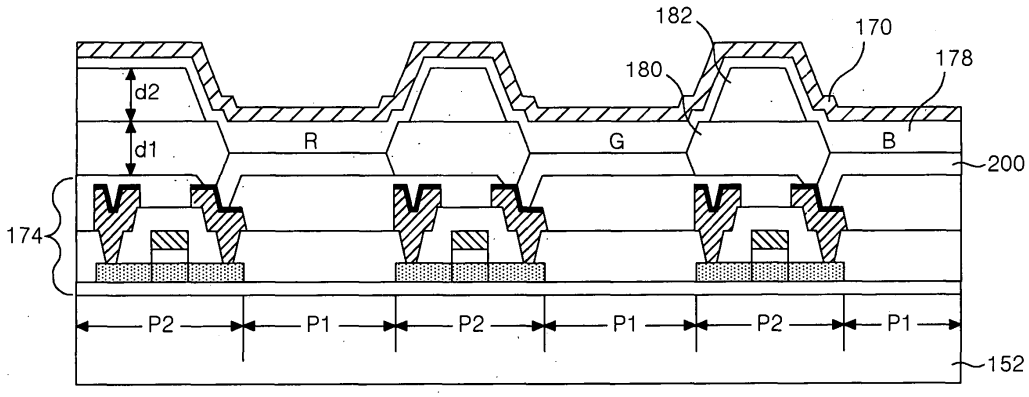
(72) Inventors:
- **Kim, Woo Chan**
  **Seoul (KR)**
- **Park, Hong Ki**
  **Nr. 208-907**
  **Buk-gu**
  **Daegu (KR)**
- **Bae, Hyo Dae**
  **Daegu (KR)**
- **Tak, Yoon Heung**
  **107-201, Gangbyeon Boseong Apt.**
  **Gyeongsangbuk-do (KR)**

(74) Representative: **Zech, Stefan Markus et al**
**Meissner, Bolte & Partner GbR**
**(Depotstrasse 5 1/2, 86199 Augsburg)**
**Postfach 10 26 05**
**86016 Augsburg (DE)**

## (54) Organic electroluminescence display device and fabricating method thereof

(57) An active matrix organic electro-luminescence display device and a fabricating method thereof for preventing a damage of organic light-emitting layer and a pixel badness are disclosed. In the organic electro-luminescence display device, a thin film transistor array (174) is provided on a substrate (152). A first electrode (200) is connected to the thin film transistor. At least one insulating film (180,182) exposes the first electrode and separates each pixel. An organic light-emitting layer (178) overlaps with the first electrode. A second electrode (170) is provided on the organic light-emitting layer.

FIG.6




EP 1 598 869 A3

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 05 01 0627

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| X<br>Y | US 2002/093286 A1 (OHSHITA ISAMU ET AL) 18 July 2002 (2002-07-18)<br>* paragraphs [0012] - [0014], [0025], [0026], [0028], [0031], [0034]; figures 5a-5b * | 1,2,4-7, 9,10<br>3,8 | INV. H01L27/00 |
| X<br>A | EP 1 102 317 A (SONY CORPORATION) 23 May 2001 (2001-05-23)<br>* paragraphs [0001], [0025], [0028], [0030], [0031], [0034], [0042], [0043], [0048] * | 1,2,4-7, 9,10<br>3,8 | |
| X | EP 1 096 568 A (SONY CORPORATION) 2 May 2001 (2001-05-02)<br>* paragraphs [0022] - [0036], [0053]; figures * | 1,2,4,6, 7,9 | |
| X | EP 0 989 778 A (SEIKO EPSON CORPORATION) 29 March 2000 (2000-03-29)<br>* paragraphs [0136], [0156], [0171] - [0174] * | 1-3,6-8 | TECHNICAL FIELDS SEARCHED (IPC)<br>H01L |
| X | WO 02/087287 A (HITACHI,LTD; ARATANI, SUKEKAZU; KANEKO, YOSHIYUKI; TSUMURA, MAKOTO) 31 October 2002 (2002-10-31)<br>* figure 15 *<br>& US 2004/137658 A1 (ARATANI SUKEKAZU ET AL) 15 July 2004 (2004-07-15)<br>* paragraphs [0012], [0036], [0043], [0064] * | 1,2,6,7 | |
| X | US 2003/127657 A1 (PARK JAE-YONG) 10 July 2003 (2003-07-10)<br>* paragraphs [0021], [0036] - [0038], [0046] - [0048] * | 1,2,6,7 | |

-/--

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 27 September 2006 | De Laere, Ann |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 05 01 0627

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| Y | US 2004/017162 A1 (SATO TOSHIHIRO ET AL) 29 January 2004 (2004-01-29) * figure 13 * ----- | 3,8 | |

TECHNICAL FIELDS SEARCHED (IPC)

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 27 September 2006 | De Laere, Ann |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 01 0627

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

27-09-2006

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 2002093286 A1 | 18-07-2002 | JP 2002208484 A | 26-07-2002 |
| EP 1102317 A | 23-05-2001 | JP 2001148291 A | 29-05-2001 |
| | | US 6614174 B1 | 02-09-2003 |
| EP 1096568 A | 02-05-2001 | US 6768257 B1 | 27-07-2004 |
| EP 0989778 A | 29-03-2000 | CN 1258428 A | 28-06-2000 |
| | | WO 9948339 A1 | 23-09-1999 |
| | | JP 3328297 B2 | 24-09-2002 |
| | | TW 439389 B | 07-06-2001 |
| WO 02087287 A | 31-10-2002 | US 2004137658 A1 | 15-07-2004 |
| US 2004137658 A1 | 15-07-2004 | WO 02087287 A1 | 31-10-2002 |
| US 2003127657 A1 | 10-07-2003 | KR 2003058151 A | 07-07-2003 |
| US 2004017162 A1 | 29-01-2004 | CN 1496204 A | 12-05-2004 |
| | | TW 222048 B | 11-10-2004 |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

| | | | |
|---|---|---|---|
| 专利名称(译) | 有机电致发光显示装置及其制造方法 | | |
| 公开(公告)号 | EP1598869A3 | 公开(公告)日 | 2006-11-15 |
| 申请号 | EP2005010627 | 申请日 | 2005-05-17 |
| 申请(专利权)人(译) | LG电子株式会社. | | |
| 当前申请(专利权)人(译) | LG电子株式会社. | | |
| [标]发明人 | KIM WOO CHAN<br>PARK HONG KI NR 208 907<br>BAE HYO DAE<br>TAK YOON HEUNG 107 201 GANGBYEON BOSEONG APT | | |
| 发明人 | KIM, WOO CHAN<br>PARK, HONG KI NR. 208-907<br>BAE, HYO DAE<br>TAK, YOON HEUNG 107-201, GANGBYEON BOSEONG APT. | | |
| IPC分类号 | H01L27/00 H05B33/22 H01L27/32 H01L51/50 H05B33/10 H05B33/12 | | |
| CPC分类号 | H01L27/3211 H01L27/3246 H01L2251/558 A47G21/182 A47G2200/08 | | |
| 优先权 | 1020040036363 2004-05-21 KR | | |
| 其他公开文献 | EP1598869A2 | | |
| 外部链接 | Espacenet | | |


摘要(译)

本发明公开了一种有源矩阵有机电致发光显示装置及其制造方法，用于防止有机发光层的损坏和像素不良。在有机电致发光显示装置中，薄膜晶体管阵列（174）设置在基板（152）上。第一电极（200）连接到薄膜晶体管。至少一个绝缘膜（180,182）暴露第一电极并分离每个像素。有机发光层（178）与第一电极重叠。第二电极（170）设置在有机发光层上。


FIG.6